

Defense heritage: strategies for disposal and use. The case of the “La Marmora” Barracks in Via Asti, Turin

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Fabbrica della Conoscenza

XV INTERNATIONAL FORUM

Le Vie dei
Mercanti

Carmine Gambardella



WORLD HERITAGE
and DISASTER

WORLD HERITAGE and DISASTER

Knowledge, Culture and Representation

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Fabbrica della Conoscenza numero 71
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Fabbrica della Conoscenza

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WORLD HERITAGE and DISASTER
Knowledge, Culture and Rapresentation
Le Vie dei Mercanti _ XV International Forum

La scuola di Pitagora editrice

Carmine Gambardella
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History
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Predation
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WORLD HERITAGE and DISASTER Knowledge, Culture and Representation

Le Vie dei Mercanti XV Forum Internazionale di Studi

Napoli | Capri
15 - 16 - 17 June 2017

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Peer review Scholars has been invited to submit researches on theoretical and methodological aspects related to Smart Design, Planning and Technologies, and show real applications and experiences carried out on this themes. Based on blind peer review, abstracts has been accepted, conditionally accepted, or rejected. Authors of accepted and conditionally accepted papers has been invited to submit full papers. These has been again peer-reviewed and selected for the oral session and publication, or only for the publication in the conference proceedings.

Conference report 300 abstracts and 550 authors from 30 countries:

Albania, Australia, Benin, Belgium, Bosnia and Herzegovina, California, Chile, China, Cipro, Cuba, Egypt, France, Germany, Italy, Japan, Jordan, Kosovo, Malta, Massachusetts, Michigan, New Jersey, New York, New Zealand, Poland, Portugal, Russia, Slovakia, Spain, Tunisia, Turkey

200 papers published after double blind review by the International Scientific Committee

Preface

A theme, that in addition to highlighting the word DISASTER, wants, as in all the editions of the Forum, place the emphasis on the word Culture, the systemic product of knowledge and applications, which has a plastic strength as Nietzsche pointed out, capable of healing broken parts, to recover lost parts, and as such belongs to humanity, the Man Artifex and Faber in its historical self-reproduction.

A faith in humanity's ability to achieve ever higher levels of knowledge to offer as patrimonial value, beyond disastrous contingencies, which contains reparative stem cells and also fortifies evolutionary processes involving the Skills and Work of Man, the fate of Landscapes, Territories, Cities, Architecture and Archaeology as Traces of Geography of the past that emerges in the Geography of the Present.

For these reasons, in Naples on 15 and Capri, on 16 – 17 June, the 15th “International Forum Le Vie dei Mercanti” will be held. An established event that in three decades has seen the participation of a scientific community from around the world grow, discussing multidisciplinary topics relating to the Landscape, Cultural Heritage, Government of the Territory, Design and Economics.

Therefore, I expect, along with the International Scientific Committee, contributions of studies and research relating to theories, concepts, applications, best practices to protect and preserve, in order to not only transmit to future generations the tangible and intangible patrimony of the World Heritage but also to orient the design processes and innovative planning for the modification that derive from the humus of identities and roots of the places, the regenerating sap of the places and of a “new”, which, citing Argan, possesses a contemporary of what it does not have the same date.

The location is exceptional. Campania, with six sites included in the World Heritage List, two UNESCO Man and Biospheres, two assets on the List of Intangible Heritage, is one of the richest regions in the world for cultural and landscape heritage. It is therefore no coincidence that the Forum will be held in Aversa/Naples and Capri, with visits to the sites and presentations of operational projects by the scientific community of Benecon, a University consortium that hosts 250 researchers and distinguished professors of five Italian Universities, UNESCO Chair on Landscape, Cultural Heritage and Territorial Governance.*

*Carmine Gambardella
President and Founder of the Forum*

ID 002

Heritage Commodified – tangible and intangible values vs global commercialisation

Monika BOGDANOWSKA

Cracow University Poland

John Ruskin was perhaps the first to discover the value of travelling (and thus resultant personal recognition) as an activity which helps to sustain historical sites. Over the past two hundred years, travelling patterns have changed along with tourists, whose inducements to visit have also changed. The concept of heritage which has emerged following the damage resulting from WWII is much more complex than that which applies to a single monument or historic site. It seems that one of the turning points was the concept of identifying outstanding universal value in 1975, which allows monuments to be enrolled in the World Heritage List by UNESCO. Commercialisation of heritage, along with the tourism which followed and the accompanying evolution of protection measures, has brought about the critical danger of aggressive uncontrolled development by the tourism industry in response. We face gradual loss of the authenticity of heritage, which seems to be being overwhelmed by commerce. Around historical sites, these processes have caused precarious social problems due to transmutation of historical habitats into tourist traps. It seems that we have reached the period of final opportunity to combat the negative impact of heritage commodification if we are going to be able to address these problems meaningfully. This paper discusses the issues with the help of case studies of famous "destinations", e.g. Venice, Cracow, Stonehenge and others.



ID 003

*Natural catastrophes and war damage in Tivoli.
Changes to the city and proposals for enhancement*

Gabriele AJO'

Roma Tre University
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Catastrophic natural events such as earthquakes, landslides and floods or anthropic ones like those caused by a conflict of war are unforeseen phenomena which, in the blink of an eyelid, ravage the natural evolutionary process of a city or a landscape which had previously been characterized by a natural centuries-long process of development.

We only have to turn to the recent earthquake in Central Italy to understand the topical relevance of these issues and the necessity of taking action in disaster situations limited to reduced areas hit by a “traumatic” event. When a historical district or architectural heritage takes the brunt, the debate became fueled as to what is the best *modus operandi* to carry out the “reconstruction”.

It is therefore useful to learn what mistakes were made in the past and to draw positive lessons from post-catastrophe transformations. We have chosen the centre of Tivoli, in the district of Rome, as the subject of this study, a town whose history has been marked by two significant catastrophic events: the “great flood” of the Aniene River in 1826 and the aerial bombardments of World War II.

Through the consultation of documentary and photographic material, such as maps of the areas affected by the catastrophic event, it was possible to analyze the damage and the process actions in the reconstruction which sometimes can be attributed to more respectful attitudes towards the pre-war layout but other times are less coherent with the stamp of the city's historical architectural development.

ID 005

From disaster to regeneration

Nadia FABRIS

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Italy

On the night of the 12th June 1940, Turin was bombed by British planes destroying buildings near the city centre.

Following the war the city needed to create a new economy. Workers consisting of young people and women poured in from outside the city. Before the war, "Turin, the industrial city" was the largest manufacturing centre in Italy. The growth of modern industrial engineering continued after the war. Companies such as Fiat transformed their manufacturing processes and their consumer products.

During the early years of the second world war, Turin was subjected to sporadic bombing at night resulting in moderate property damage and loss of human life.

From November 1942 until August 1943, Turin suffered twelve bombing raids which involved more than 100 airplanes dropping large-caliber bombs and tens of thousands incendiary and phosphorus bombs.

The sustained bombing resulted in half of the population of Turin leaving the city (338,000 of 600,000) and returning each day to the factories for their work. This displacement of people changed the character of the Turin as an industrial city.

The final bombs fell on Turin during the night of the 5th April 1945 and these damaged the railway station and surrounding areas. By the end of the war, Turin had a total of dominantly from the medieval era.

ID 007

Mechonomics: design thinking for growth and resilience of sociotechnical organizations

Bernardino M. CHIAIA

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In this paper the principal ideas of mechnomics are introduced. Mechnomics is a neologism indicating the possibility of predicting the behavior of sociotechnical organizations in the complex and interconnected world of the 21st century by means of models borrowed from structural mechanics. In particular, the concepts of growth, resilience and robustness of the organizations are discussed.

The analogy with structural and natural systems is shown to be sound and permits to interpret the effects of the size of the organization and of its internal arrangement and collapse of enterprises and institutions.

Consequence-based design, as the tool able to tackle with unpredictable stimuli and external effects, is introduced as the only robust philosophy that should pervade design and management of sociotechnical organizations.



ID 010

The brick kiln of Pisciotto Country, in Scicli: an example of "human disaster"

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The brick kiln Penna in Pisciotto Country, Scicli, is now a stately and elegant ruin by striking beauty, faded and mortified by the passing of time and by the neglect of man.

The Beautiful scenery which formed the backdrop for the artifact, is now disfigured by illegal constructions and tourist villages with high receptivity; while the rocky outcrop from which one day stood the high smokestack, became "site of cinema", a bond that along with many others, in fact, have done little for the safeguard of this place.

Time seems to have stopped in a night at late January 1924 (or 1926), when the whole factory was engulfed in flames of an arson fire that has stopped forever the flourishing productive activity.

Nature has slowly regained possession of that area, invading the space occupied, at one time, by the walls crumbling by now. The relentless degradation and the bureaucratic delay did the rest: the majestic structure of the settlement slowly disintegrates and its white stones of hard limestone, composed with wonderful skill by the artisans of the time, return to regain the ground.

Today the brick kiln Penna is one of the most interesting examples of industrial archaeology in Sicily.

ID 011

Emergency and Survey. The use of photo modeling to document the minor building heritage after a natural calamity

Antonio BIXIO

Enza TOLLA

Giuseppe DAMONE

Carlo PLASTINA

University of Basilicata
Italy

The question of the documentation of the architectural heritage after a catastrophic event, such as landslide, flood or earthquake, is a topical subject, as shown by the latest events in our Country.

In the emergency after a disaster, the housing needs of evacuees by rebuilding as soon as possible, coexists with the urgency to document the building heritage in order to supervise and plan compatible recovery operations to preserve its features.

The modern technologies give the possibility to complete a proper survey by reducing the data acquisition times as well as the measurement errors.

Leaving aside the use of laser scanners and drones, this paper wants to present the results obtained with the use of photo modeling applied for the documentation of Alianello (MT) a small town in Lucania, abandoned after the disastrous earthquake of 1980 . With the use of the photo, processed with specific software, it was possible to detect in detail this small village by returning survey papers from which it is possible to analyze the crack pattern that affects the individual buildings, all operating in safety.

ID 012

Slow Motion Disasters

Marinella ARENA

University Mediterranea
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Some disasters are sudden, striking, noisy and spectacular; like earthquakes, landslides, floods, volcanic eruptions. Other disasters are durable, common, silent and invisible: they are the slow decomposition of urban structures, houses, society, and the feelings of belonging.

Small urban centres dotting the Italian countryside are on the brink of a silent disaster: for centuries they have kept the construction techniques, the styles and decorations that identify them as belonging to a specific geographical and cultural context unchanged; and now they risk being overwhelmed by abandonment and neglect. The progressive depletion of these centres, the abandonment, and the vicious circle that is established is putting at risk a much broader heritage than those which were hit by sudden and startling disasters.

Istat data of BES 2016 (the Equable and Sustainable Welfare in Italy) show two problems related to the architectural and landscape heritage of the south: on the one hand the lack of available resources, the negative balance of migration resulting in depopulation of the small centres; and on the other hand the lack of perception and awareness about problem by the inhabitants.

ID 014

*Reconstructing an ancient country.
Settlement and housing models for post-quake reconstruction.*

Michele MONTEMURRO

Polytechnic of Bari
Italy

The recent earthquakes that have invested some Italian Apennine regions, have highlighted the one hand the inconsistency of preventive measures and protection of our heritage and on the other the concern for their own "security" and the identity of the places affected, for the reconstruction of their beauty.

The thesis is to reconstruct the collapsed city where they were, taking the permanence in the places and the survival of the places, such as choice of identity and expression of the cultural roots of the people affected to its territory, offering to the territory, the management authorities and businesses a methodological tool capable of addressing the issue of security and material and immaterial identity of the places as a whole.

The objective of the research is the study of models for the construction/reconstruction of the Italian hill town, paying particular attention to issues of security and identity. The case studies considered consist of some Italian hill town on the Apennines hit by the earthquake.

The research methodological framework is based on three fundamental aspects that characterize the "experimental" phase, applied to the cases study: multidisciplinary (architecture, urban planning, technology, structures), multiscale approach (morphology of the territory; urban spaces and fabrics, single buildings), complementarity between theoretical study and applied research.

ID 015

Illustrate the cultural heritage. Some experiences

Sara D'AMICO

Università degli Studi di
Firenze, Italy

In recent years, we are witnessing a kind of emancipation of the traditional idea of a cultural Heritage, even with the entry of computerization in the management and exploitation thereof.

While it is true that have now become standard practice all those systems that allow you to perform more quickly and, above all, in depth the surveying, cataloguing, archiving and monitoring of cultural heritage – from 3d laser scanning and Photogrammetry and increasingly complex databases or virtual archives – on this occasion we want to watch instead transformations that are engaging, and perhaps upsetting the traditional Museum design.

It will lead to some concrete experiences worldwide exhibition, taken from museums, to try to understand the results of the simulated reality overlay to the innate Visual reading of works proposed. Considering the growing trend toward digitization, ask us what is meant today for "cultural product" representation, given that we are moving towards a perception and, therefore, increasingly drawing "increased".



ID 017

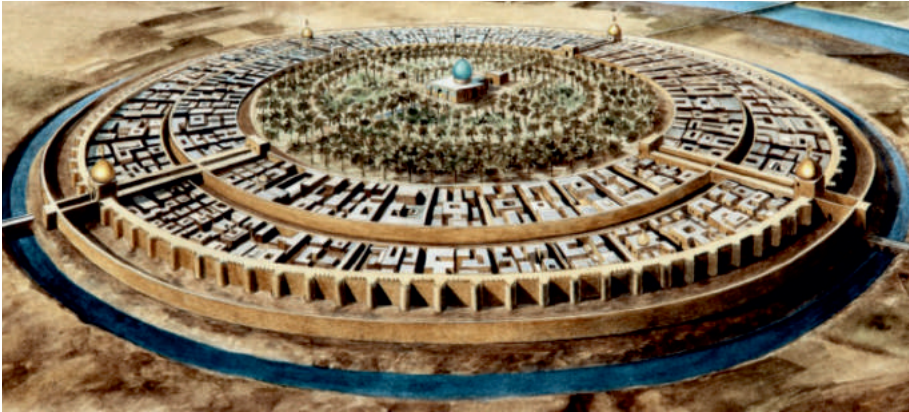
Comprehension of the spontaneous occupations' image in the XXI th century

Yaneira WILSON

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Bidonville, slum, favélas, ranchos, and any name given to a spontaneous occupation are all considered synonyms and a same type of urban tissue. Depending on language, these occupations get different names around the world. However, in our imaginations their appearance are all the same. The truth is there are significant differences between all of these in the way they are presented, portrayed, and targeted on the Internet. Not all spontaneous occupations are the same, and not all spontaneous occupations are given the same type of attention from different audiences. Some spontaneous occupations are acclaimed and some are not. Some are even given high recognition, while other similar structures are merely ignored. There is a contradiction: there is a rejection for the local spontaneous occupation while there is a fascination for the foreign spontaneous occupation.

Spontaneous occupations or low-income settlements tend to be residual spaces of the city and a result of abandonment. They are born out of both the negligent authoritative figures and the hungry body of citizens who -for an unfortunate reason or another- are in a urgent need of a living space. This is why the existence of these occupations is associated with transgression of the urban world. I aim to create a visual analysis to illustrate (to literally create a visual representation of) our contradictory reality.



ID 018

Baghdad imago in the medieval travel journals and its influence on European architecture.

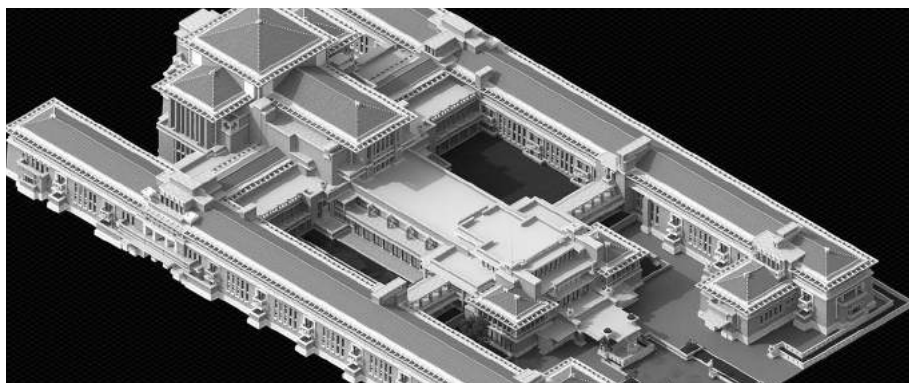
Maria Carolina CAMPONE

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During the high medieval period, the Europe was in cultural contact with the Islamic world and especially with Baghdad. In particular, the adoption of the round plan, charged of political and ideological meanings, and buildings of the Arab city, also described in many medieval stories, had a profound effect on the artistic and architectural culture in the Old Continent.

The descriptions of Baghdad came to the West also through the report of the few travelers who arrived. The comparison between two of these precious diaries, along with archaeological data, allows us to reconstruct the forma urbis of Baghdad, before and after the fall of the city in 1251.

The Mongol sack lay almost seven decades in the past when Ibn Battuta first visited the city and he noted that large sections of it were still for the most part in ruins. Though, in addition to describing visits to the mosques and madrasas, supported by nobles or by the sultan himself, he faithfully notes Baghdad's bridges, aqueducts, fountains, reservoirs, baths, fortresses, turrets, machicolated walls, palaces, workshops, factories, granaries, mills, caravansaries, hovels and magnificent bazaars splendidly laid out.



ID 019

Reloading the Imperial Hotel by Frank Lloyd Wright. Graphic Analysis and Virtual Rebuilding

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The day of the opening of the Imperial Hotel – 1st September 1923 -, designed by F.L. Wright in the years 1916-1923, an earthquake struck the city of Tokyo. It was one of the few buildings to withstand the earthquake thanks to the plan organization and the construction technique used by Wright. The telegram the architect received from Japan was "Hotel stands undamaged as monument of your genius". The project by Wright replaced the preceding version, realized in 1890, using mainly wood as material – but it was destroyed in 1968 for a bigger vertical structure, having more rooms.

The aim of this research was the analysis and the digital reconstruction of the project, thanks to the study of design drawings, historical photographs and images related to the physical model present in the Meiji Mura Museum in Nagoya. A careful comparison was also conducted with some precedent works of the author in order to identify similarities and differences that could be useful to understand better the work.

After the phase of two-dimensional analysis, there was the three-dimensional modeling and the texturing of all the surfaces to obtain a realistic simulation of the great architectural system. We have used the Global Illumination algorithms to simulate the real light of the configuration. In the end a digital video animation allows to visit virtually the spaces, to understand the quality of the project.

ID 020

The regulatory framework and the historic-centre rehabilitation project

Maria Paola GATTI

Giorgio CACCIAGUERRA

University of Trento
Italy

The component parts of historic centres have become fragile either as a result of neglect or through incongruent and incompatible extension and adaptation work. In the last century's "building frenzy" this kind of work was often carried out without any concern for the original features of town planning schemes, in the conviction that new materials and building technologies were able to master nature. In the course of the last century Italy promulgated an intricate, and in some cases excessive, set of regulations in an attempt to construct, transform, conserve and exploit the potential of historic cities. Unfortunately, the results were not outstanding and today we need to rethink them all if we are to reverse the abandonment of historic centres and make them "safe" again.

In an effort to understand if what has hitherto been fielded is sufficient or if new strategies are called for, we have reviewed the technical measures issued over the last hundred years.

Commencing in the 1960s, the rehabilitation of historic city centres began in earnest, but not, regrettably, before some underwent wholesale demolition. However, in a large number of cases such work only increased their fragility while in many others, especially as concerns small centres with traditional economies, no rehabilitation work was attempted, not even essential maintenance work, and thus their functional and physical obsolescence became manifest.

ID 021

Preserving, enhancing and innovating minor religious architectural works

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One consequence of globalisation has been the design and construction of identical buildings without regard to their geographical, cultural or economic setting, thus nullifying what, for centuries, was a foundation of most architectural designs: the knowledge of a location's defining physical and non-physical (history, culture, customs, etc.) features. In his desire to define new forms and use new materials and technologies, the architect frequently neglects the context in which they are to be situated. However, the interpretation of the extant and thus its meaning is essential for acquiring the conceptual model at the heart of our shared heritage.

In the past, a construction had to exploit the terrain's morphology in order to optimise lighting, permeability to wind and exposure to the sun. And besides being a function of field patterns and road systems, a building's location also had to underline the role intended for this architectural creation.

Therefore, when we today design and construct a sustainable building we should consider returning to architectural tradition and hence take account of the functional and stylistic elements that characterise a setting or place: a design based upon "processes of significant interactions between a place's material, energetic and cultural resources and the functional, structural and linguistic organisation of architecture", in short, an environmental and cultural approach.

ID 022

Retrofit Vs Rehabilitation: improving technological quality of the existing school building

Antonella VIOLANO

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The prerequisite of an appropriate technological retrofit design is a thorough analysis of the technical-constructive DNA, so that both the types of work that the materials to be used can be selected in relation to the specific performance deficiencies. This paper presents the results of a research funded by the Campania Region, which investigated the issues related to retrofit of existing school building, in order to improve the energy efficiency of the places for training and reduce the risks related to the functional degradation, even in the event of environmental disasters.

Starting from the evaluation of the energy performance, the research has identified interventions that increase the technological quality of the buildings, according to the specific construction types and effective even in terms of costs. From a methodological point of view, the research started by the Ministry of Education Guidelines for a good school, analysing the Environmental Unit and the internal distribution system in order to verify as satisfying the functional regulatory requirements. Then, from the evaluation of the energy performance, the research has identified interventions that increase the technological quality of the buildings, according to the specific construction types and effective even in terms of costs. The energy audit has been the most effective tool to achieve these goals.

ID 024

Geomatic's tools to record 3D shapes for intervention planning

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The paper offers a state of art of Geomatic's tools that it is possible to use after a natural and/or human disaster on urban centers or natural landscapes to record the 3D shape. This knowledge is important both for first aid initiatives devoted to safeguard human lives and support decision on first technical interventions. The same data, if correctly recorded, are the basic step to plan recovering actions and reconstruction strategies.

The high automation level of the metric survey techniques open unsolved questions about the correct use of automatic tools both to acquire primary data and the appropriate management of them to give to the specialists affordable and accurate metric information.

Image based technologies (e.g. 3D photogrammetry, SFM) and range based instruments (e.g. terrestrial and aerial laser scanning systems) are analyzed in terms of best rules to acquire the necessary primary data by highlighting the most common mistakes that automation approach could generate; the same analysis is developed for the software used to manage those primary data where automation processing are in many cases not well understood.

A more skilled use of primary data acquisition instruments and management software will allow a better quality of the resulting 3D models also considering the real needs in the different phases of the emergency after disasters.

ID 025

Mapping and Communicating the Environmental Risks

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Risk mitigation represents one of the greatest challenges for conditions of sustainable development facing today's local planning . The growing critical incidents linked to the occurrence of "extreme" climatic conditions have highlighted the unsolved problem of territorial vulnerability and the level of risk with which a large portion of the population has to co-exist. The problem, which only recently became apparent, has deep roots, the main one stemming from the alteration of the landscape and from the related gaps within planning activities. Different elements became strategic in risk management.

Representation is a fundamental tool to transfer knowledge. Through the representation and visual communication it is possible to encourage the awareness of public opinion on landscape dynamics and on risks related to them. Starting from some case study, in this article will be discussed the new research perspectives by proposing a path starting from the survey of urban and environmental dynamics up to the communication and to the public awareness on risks, crossing the entire field of landscape representation.

ID 027

Conservation and valorization of Iraqi Kurdistan's Cultural Heritage: an Archaeological Park against war damages

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ID 028

To know and represent environmental and cultural disaster of the territory: historical documents, current situation and valuation strategies

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The contribution focuses on issues related to documentation and representation methods of the territory, more and more compromised by event and calamity, both anthropological and natural, that led to the depletion of many historical centres, rich in natural and cultural values. The phenomenon of abandonment which has involved for years several villages in Abruzzo - due to the economic impoverishment factors generated by the lack of productive activities, the changing lifestyles, the displacement of infrastructures and traffic that has often modified the layouts of the past, moving them away from the modern communication networks – is further exacerbated by the problems of hydrogeological instability and the repeated seismic events (2009 and 2016). The several researches conducted on the territory, the surveying activities realized for different purposes, methodologies and opportunities for study, allow to analytically examine this scenery by combining their existing data with the current updates, carried out with the help of drones and acquisition software image based. On such documentary bases, organized in data-base, the cognitive process that aims a reading of pieces from the territory is articulated, carried out at different scales, which are reassembled as in a puzzle to provide analytical information, based on the survey and their graphical representations.



ID 029

The granary silo of Arezzo. Notes for a Reuse

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Here it takes a reflection about historic architecture, of great value and significance, as the silo granary of Arezzo, designed in 1936 by engineer architect Ubaldo Cassi from Arezzo, commissioned by the local agricultural cooperative. As happened to many other contemporary systems of silage, even the silos of Arezzo was abandoned, remaining today an empty building, almost simulacrum of himself. In the 2000s it risks the demolition but will be "saved" by an urban intervention that, under a more effective exploitation of the relevant area, manages to give it back to her community, simply because it leaves at the edge of a square-parking. As if it were impossible his recovery, finding and dialing a comprehensive set of more functions, without forgetting the heritage of the existing architectural design.

This study tries to represent as well, through a concrete case, the cornerstones of a sensitive project Reuse, able to involve architecture as a qualifying subject of an entire environment: it will be proposed significant relationships between values as an artistic-architectural Opera, functional Versatility and urban Potential. These values are so frequently recall and too often disregarded or, even worse, sacrificed.

ID 030

Revival from disaster

Federica CAPRIOLO

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The transformations and the important socio-economic changes that prefigure our future style of life occur mainly in the cities whose history is an important part of the identity of places. They are symbolic and monumental environments characterized by the presence of a considerable artistic heritage which implies a careful analysis of the structure and approach of the urban fabric.

With the Leipzig Charter we become aware of the social dimension of the problem and the need to enable sustainable strategies to address the housing and the incipient upheaval environmental malaise. It promotes integrated urban development by creating social and economic infrastructure and facilities, and green spaces to improve air quality.

Kept account of the dismay for the actual difficult economic and social conditions of the cities, makes him necessary to redefine the perimeter of the reflection on the urban environment, in the optics of the active maintenance of the built one and to improve the planning.

One approach in this direction is a rethink of “Palazzo Prever” in expanding nineteenth-century palace located next to the Porta Nuova railway station in Turin.

ID 031

Contemporary urban design as a social project

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In an effort to create a new balance and better prospects in the urban fabric, we have realized that the lack of a unified project, despite valuable architectural interventions, ignores the best expectations. Often the actions on the city are revealed only episodes, according to the cd. logic of the village, and although it is important and innovative projects, as well as the most modern ecocities, they fail to lay the foundation for future cities. It is ignored completely what Norberg-Schulz defined the orientation and identification factors. The approaches are, in most cases, too functionalistic and technician.

It claims to rewrite the urban design without considering that all the strategies and all the means of intervention belong to the same language. There is only one environment and only one landscape, the territory should be seen in its uniqueness, cities and landscapes have common and complementary logic and they are part of the same story, in which man always remains undisputed star. The project of contemporary places, therefore it must be a "social project." Exemplary in this regard were the re-generation interventions of Malmö, the GMV and Hammarby Sjöstad, where he pursued a great balance between natural and anthropogenic factors, including social, economic and cultural, as they all fall and fit perfectly in the broader urban organism.



ID 032

The impact of the great fire of Krakow in 1850 on the shapes of town houses and urban tissue transformation

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The top quality architectural heritage and the plethora of forms deriving from a variety of historic periods give Krakow its clearly defined identity, recognizable both nationwide and globally. Unfortunately, throughout its long history, Krakow has suffered a number of fires. This article discusses the impact of the great fire of 1850 on the successive development of the city. A number of precious monuments, churches, monasteries and about 160-180 palaces and town houses at the Market Square and adjacent streets were lost to fire on one day alone. The calamity caused irreparable damage to architectural heritage and depleted material assets of residents (furniture and interior fittings, collections of paintings and books, etc.).

Paradoxically, the fire that necessitated the reconstruction or conversion of damaged buildings spurred an investment boom. It also contributed to the straightening and regulation of the southern and eastern frontage of the Market Square and, later on, the restoration of preserved buildings (the Cloth Hall). Newly designed palaces and town houses were characterised by superior functional and aesthetic qualities – their facades were renovated and fireproof materials came into widespread use. Finally, the fire raised awareness of the importance of monument protection and contributed to the development of the field of monument conservation.



ID 033

Earthquakes in Madonie area of Sicily during the years 1818-1819: damages and constructive techniques

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Federica SCIBILIA

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Between the years 1818 and 1819 a lot of Sicilian centres concentrated in the mountainous Madonie area were damaged several times by earthquakes that caused widespread collapses to the monumental and basic architectures. We would investigate the damages and also the reconstruction interventions, particularly referring to building typologies and to that construction techniques adopted before and after the earthquake.

The verification and monitoring of the conditions of buildings, associated to the consequent consolidations and repairs are effectively documented by the writers of essays and reports coeval to the earthquake and above all by archival documents. We would identify the traditional building techniques in the Madonie area, underlying their originality and diffusion in the analyzed centres; with a particular attention to the anti-seismic reconstruction solutions adopted following the earthquake, often based on the art-rules.

The study intends to provide a knowledge of construction characters of this homogeneous geographical area, which may provide the municipalities and the technicians of parameters and guidelines for the necessary restoration works, as well as safety measures for the mitigation of seismic vulnerability of building heritage.

ID 034

Patrimonial Intervention: Institutional Archive of the Mariana Univ. of architectural plans of documentary type in San Juan de Pasto, Nariño, Colombia

**María Fernanda García
BURBANO**

Alejandro DELGADO

Universidad Mariana
Nariño
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The present work is an advance of investigation on the urban history and the cultural patrimony of San Juan de Pasto; Part of a reflection on the insufficient patrimonial representation of the city in the list of goods of national cultural interest (LBICN), especially the type of furniture; This idea is framed in the institutional file of the Mariana University, especially the documentary type "Architectural blueprints" of the section of the rectory "Titles of property", with approximately 613 non-textual and textual pieces with a value historical, aesthetic and symbolic, representing part of the historical memory of the country, especially in the field of architecture and civil engineering. This shows the transformation of the institution from 1967 to 2017 with the contribution of regional and national professionals; It is intended to make the documentary intervention in three levels curator, description and patrimonial investigation to analyze and explain the scenario of potential patrimonial of the documental fund property of the university; The above argument is illustrated through an ideographic content that offers arguments to initiate actions of conservation, restoration that it is intended to propose the inclusion of this national heritage / BICN furniture heritage fund with the respective Plan Especial de Manejo y Protección / PEMP according to Decree 763 of 2009 of the Ministry of Culture Colombia finally an eventual inclusion in the list of goods of national cultural interest (LBICN).

ID 035

Defense heritage: strategies for disposal and use

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The debate on the enhancement and management of real estate emphasizes the State Property (45397, of which 13% historical and artistic heritage): it's brittle assets with risk of loss of identity. The case of the La Marmora Barracks is emblematic: an interdisciplinary research has tested the method of the valuation cycle.

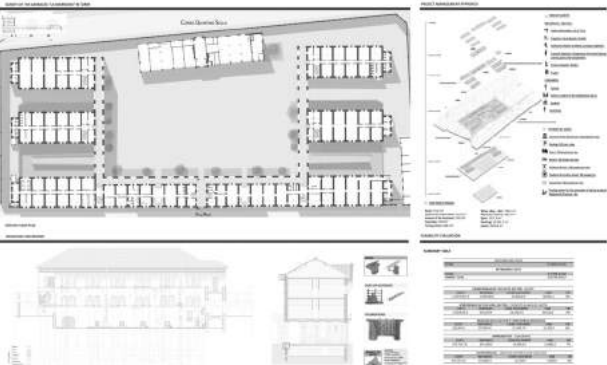
The barracks is included in the list of the Properties Defense desused, which create the urban voids in areas to return to the city with reuse strategic operations can't be postponed.

The road map of support decision-making wed to valorization scenarios, abiding memory of the factory.

Attention is focused on the building to define restoration and put in efficiency, the cost estimate and the timing in the preliminary works, according to the approach of the construction management.

The definition of the interventions represents an analytical phase of the factory knowledge through reliefs, study of treaties and non-destructive surveys as thermography.

The method requires a shift from the knowledge to the intervention and valuation, that occurs the feasibility of the enhancement scenarios with assessment tools of a strategic nature.



ID 036

Mapping by memory_An approach to prevent and programming opportunities for high-risk disaster areas

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Often, especially in Italy, the areas of high risk disasters, seismic or hydrogeological situations, coincide with the central territories forsaken even though rich of history, culture and architecture, located in areas of outstanding natural beauty.

In these situations, one of the elements of greatest difficulty is the lack of operational tools such as surveys, thematic maps of fragility (cultural, economic, environmental, social) and analysis of the tangible and intangible heritage. Frequently the existing documentation, especially in small villages, appears fragmented and lacking in coherence both scientific and operational. This making it difficult to plan a strategy for the prevention needed to safeguard human lives and the historical architectural, cultural heritage, and reconstruction in the case of post disaster.

For example, the continuous seismic emergencies in central Italy recently have highlighted the weakness of basic information on the correct approach to reconstruction.

It follows the need to identify shareable models of mapping of the fragility that at the same time containing the information of the assets at risk.

The proposal is to investigate the possible methodological paths for the construction of multi-disciplinary and multi-scale thematic maps as an essential process of planning, risk prevention and enhancement of fragile areas such as those at risk of various disasters.



ID 037

Mazara de Vallo: a Participation and urban self-recovery case study

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The aim of this paper is to investigate how a significant and historically presence of migrants contributed to a social, urban and economical change within the territory of Mazara del Vallo, an Italian municipality in the province of Trapani (Sicily). This case study outlines the crucial role that migrants had in the revitalization of the fisheries sector that had always been the main economic activity of the territory, but that was likely to be seriously affected after the abandonment of the city by many native citizens. Moreover, the security thus generated in the workplace contributed to the affirmation of a greater economic stability among migrants changing their initial intentions regarding the shift to other production contexts more developed than that of Sicily. This led to a steady configuration of the foreign presence within the territory of Mazara triggering a process of urban self-recovery activated by the migrants themselves that with their own economic resources have renovated the houses in the historic center of Mazara. Later, this bottom-up revaluation of the historic fabric of the city has also mobilized the interest of municipal authorities which, starting from the '80s with the General Urban Plan (PRG) and following with the Strategic Plan adopted in 2010, considered to adopt new measures of management of foreign communities' social needs, implementing policies of cultural and urban development. The combination between citizens-led initiatives and the recovery process launched by the Mazara's Municipality has produced among the results the return of many native citizens along with the definition of good premises for a process of euro-Mediterranean integration now perceived as a real opportunity of renewal for the entire city.



ID 038

The baroque domes in Catania (Sicily)

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In 1693 Catania was destroyed by a violent earthquake. The reconstruction was a slow and laborious challenge that gave birth to an historic centre, which is nowadays recognised as a UNESCO World Heritage Site.

The panorama of the rebuilt city was soon dominated, in the second half of the XVII century, by four baroque masonry domes, symbols of spiritual and temporal power: the domes of the Cathedral, Sant'Agata alla Badia, San Michele Arcangelo and San Nicolò l'Arena churches. These big vaults, which survived several following earthquakes, represent the highest expression of the XVII century architectural knowledge in eastern Sicily.

Each dome has been studied, both from a geometric and constructive point of view, in order to reveal the secrets concerning design, proportions, profile, construction and statics. Archival documents and unpublished sources have been consulted, while 3D laser scanner surveys and non-destructive tests have been carried out to achieve complete and accurate results.

The opportunity of a close investigation allowed to reveal one of the most interesting and complex pages of Catania's baroque architecture and to investigate the cultural background and the mutual influences of the involved architects and masters.



ID 039

The color-material relation in the social housing of the early twentieth century in Turin: knowing to protect a fragile value

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The heritage of social housing of the early twentieth century in Turin characterizes entire portions of the city and it is very diverse in terms of design solutions – which are innovative and in some cases of considerable value - and building consistency. It differs not only for the typological-functional choices adopted, but especially for the compositions of the facades, played on the close relation between the colors and the materials of the outer surfaces. In most cases this relation is the main element of architectural characterization of these complexes, from the urban scale to the detail's scale.

The paper aims to emphasize the value of the color-material combination, which is expressed in this built heritage in different ways, ranging from examples in which the decoration is left to the only color or to graffiti, to solutions richly played on the chromatic characteristics and the texture of the materials themselves. This combination, in its various facets, gives the building a unique aesthetic, historical, cultural and technical value, which unfortunately is often not sufficiently appreciated, especially in the redevelopment of these complexes.

In this context the two settlements built at the beginning of the twentieth century by the Società Torinese per Abitazioni Popolari and designed by Pietro Fenoglio in Crocetta and Borgo San Paolo districts, represent two exemplary cases.

ID 040

ARTQUAKE

The artistic performance rule in the post earthquake reconstruction

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The dramatic latest events referred to the Central Italy earthquake draw to the international scientific community's attention the resilience concept, which original meaning, connected to the metallurgical field, indicates the resistance expressed by a material when it's exposed to a dynamic broken test.

By extension, in psychology, the term indicates the individual's or community's ability to positively react in the face of a traumatic event by finding an ideal similar in the kintsugi (literally "to join by gold") old Japanese artistic practice, in which broken pottery fragments are recomposed using vegetal glue and golden dust, by returning new sense to the object's life though exalting its cracks with a valuable material.

Being inspired by that art and applying its sense to the contexts hurt by the earthquake events, the essay starts from a cases study selection (presented by dedicated detailed forms) to explore the deeper meaning and the results that the artistic intervention, in common with the golden welding, it's able to produce in environment devastated by natural disasters, as well as the rule that the figure of the artist has played in the past and is playing still now, with new meaning, in the post-quake reconstruction. By assuming like a central idea the both emblematic and incomparable case represented by the Great Cretto of Gibellina by Alberto Burri, in which the scar, memory of the drama and destruction, rises to a real artistic value.

ID 041

*Before and after the pestilence.
The effects of the pestilence on Southern Italy:
commerce, law, juridical ideas at the end of the
XVII century*

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The pestilence spread over Southern Italy in 1690. It was so violent to cause a state of emergency that blocked the economy and the commerce.

The risk of getting infected brought about the complete closing of the borders. Naples needed seclusion in order to survive. Addressed to this purpose, government policy caused unpleasant consequences: the stop of the commerce and, on the other side, the crisis of the hopes in the modern southern intellectuals called novatores. Their struggle against the traditional status quo seemed to be destroyed at the end of XVII century also by the pestilence. It seemed that the plague had destroyed not only people but also ideas, hopes, projects, commerce, economy. But are we sure that it really happened? The natural disaster caused several problems such as the stop of the commerce. Probably the risk of the infection was also exploited for political purposes. However theories, ideas, projects outlived the pestilence. In XVIII century those seeds produced their fruits in all the intellectual fields bringing important reforms in Southern Italy. The historical path show us elements of continuity and discontinuity. Really the plague didn't break the course of the history: natural disaster can kill bodies not ideas.

ID 042

*Drawing the Post-earthquake in Abruzzo: toward
an Atlas of Small Towns*

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For years in Abruzzo inland areas have been involving in a slow and unstoppable phenomenon of depopulation which received a violent acceleration by the earthquake in 2009. This research investigates the conformation of some small centres in the areas most affected by the 2009 earthquake through the combination of representations, informatics, texts and photographs. The study experiments on field an analytical methodology, studying the anthropological and morphological characters of this set of small towns in Abruzzo; it is a realization of the nowadays material condition of the settlements as a starting point for every future process of regeneration. The survey also provides an opportunity to investigate some proposals that civil society and local administrations are working out through heterogeneous activities as responses to the phenomenon of depopulation after earthquake. This research, so, wants to combine the survey of the existing and its forms of decay or abandonment, with graphic and photographic narrative of grass-roots experiences ranging from local tradition issues and self-subsistence economies to the relationship with past and present migrations. Thanks to the multidisciplinary and multiscale descriptive approach, the study wants to offer a snapshot of the current state that helps to broaden the shared knowledge on a phenomenon which, beyond the contingencies related to the infamous disaster, involves most of the small towns in Italy as well as in Europe.

ID 043

Wine landscapes between disaster and opportunities

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A particularly relevant landscape element is the appropriate agricultural land settlement. In recent times the widespread use of farm mechanization has had a terrible impact on the territory (elimination of borders and trees; the trend to have parallel to steep slope lines plough furrows), in particular, the transformation from the use of forest estates to the vine cultivation.

The wine landscape is an important historical and cultural Italian tradition, but during the recent past often it has been used in a worst way and finally it has sometimes created damage for the recognisability of the landscape itself. The paper reflects on innovative strategies for continuing the good ancient wine tradition, avoiding at the same time to damage the cultural landscapes.

The cultural knowledge of a wine territory is a complex of different elements in which wine, man and culture constitute an integrated tradition, and making that composition no one can prevail over the others to become a patrimonial value of the past, the present and the future.

There are some examples of good practice in which the wine landscape has been recovered and at the same time the identity of the place has been rediscovered and new opportunities for the communities have been found.

ID 044

The analysis of historical maps as a tool for the protection of the historic walled city of Alghero (Sardinia)

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The city of Alghero, in the north-western Sardinia, still preserves a part of medieval and modern fortifications. The defensive line designed in the thirteenth century by the noble Genoese family of Doria, in the sixteenth century - during Spanish Kingdom - is the object of significant adjustments. The fortress reaches its maximum expansion at the end of eighteenth century during Savoy period; at this time the modern fortifications encircled the historic city that, washed by the sea on three sides, was further defense by others outworks called demi-lune, that protected the city gate.

The decommissions of fortress (1867) gave the start to the urban growth that necessitated the demolition of a significant section of the city wall.

This planning intervention has been superimposed to the military structures, preserving the sixteenth towers and a part of the old military architecture located below the current street level, some of which appeared in recently archaeological excavations.

The entire defensive system appears accurately described in the drawings realized by Piedmont military engineers. This condition allows the identification of the position occupied by the portions demolished or buried just below the road and incorporated in the current urban street level.

ID 045

Drawing and Archaeology: new research objectives. The case of the Etruscan city of Musarna

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The collaboration undertaken between French archaeologists have discovered the remains of the ancient city of Musarna (Vt) and the skilled in drawings discipline have enabled to reach new and relevant indicators of knowledge with regard to implementing the principles of what was formerly known as "Etruscan discipline". Although initially rediscovered in the late nineteenth century, the most comprehensive knowledge of Musarna Civita is due to recent excavations, conducted by the Soprintendenza per l'Etruria meridionale and the École Française of Rome between 1987 and 1993. The later stages of the investigation, appointed to data analysis, have allowed to establish that the life of the urban center has occupied a time from the fourth century. B.C. until the seventh century. A.D. and that the foundation has depended on a requirement of the Etruscan town of Tarquinia, which Musarna maintains the character of the colony until, roughly, to 280 BC, when the entire territory is the subject of the Roman occupation. The research prevailing themes, defined in the knowledge of Musarna and agrimensoria practices, have been treated in numerous publications, including:

Starting from the acquired knowledge, the research group has turned its attention to the identification of any possible evidence able to review the activities undertaken by surveyors Etruscans came after the execution of the ritual practices.



ID 046

Cosmogonic Tattoos

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This paper examines my artistic project, *Cosmogonic Tattoos*, a window installation linking two museums at the University of Michigan, the Museum of Archaeology and the Museum of Art, using images based on objects in their collections. The discussion will explore the architectural context, the objects from antiquity that are being referenced in the designs, and the implications of reorganizing them into the epic narrative that will be “tattooed” in adhesive vinyl to over 1022 square meters of windows.

My project concerns the mutability of objects, how they change in different contexts across time and space, between materials, geographies and institutions. It is about how cultures thrive by borrowing from each other; how the displacement and distribution of objects narrates histories of human displacement and exile; and about the disasters that set those displacements in motion, using vivid images of volcanic eruptions, floods, cyclones, and military invasion all constructed from fragments of collected objects.

Through close examination of objects separated from us by chronological and cultural divides this project celebrates the power of architecture, ornament, and material objects to shape knowledge, historical memory, and cultural identity.

ID 047

Territorial planning, policies and programs for touristic development of Caserta Province

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The rich cultural and environmental heritage asset of the Italian provinces fails to attract a lot of tourists but they often don't contribute to the wealth creation.

Starting from this general consideration the contribution aims to analyze the sectoral policies and programs - defined and implemented from the Sixties up today that are focused on touristic development. Simultaneously, the paper analyzes the provisions of the Campania Regional Plan - PTR and Province Plan - PTCP in force in Caserta province. This is done, since it is assumed that strategic management of territories should be able to promote their development, not just growth, according to a wider perspective, incorporating local and global aspects, and to avoid the same mistakes already made in the past.

Only by providing simultaneous measures for touristic development policies and physical planning it will be possible to define and implement the strategic management of territories. This work points to summarize a clear background of the past and tries to prospect the future of interventions infact the new European territorial development programs emphasize the integration of the various sectoral policies with the urban and regional planning to achieve a more sustainable development.



ID 048

The Alpine villages of Val Sangone: a heritage in danger

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The mountainous territory that crowns the Piedmont plain is dotted with settlements once inhabited and vital places. Today, having suffered from the depopulation that involved the mountain areas at the end of last century, they preserve with difficulties their architectural and environmental image, and even, more generally, their own persistence. One significant example is the Val Sangone, which branches off about twenty kilometres west of Turin.

Its history is closely linked to the territory and the historical events of which it had been the protagonist at one time. Its historic architectural heritage, characterized by typical mountain building in stone and wood, has undergone significant changes during the second half of the twentieth century, due to the progressive abandonment and/or its conversion into holiday locations.

The lack of preservation of this heritage caused profound changes and, in some cases, the complete destruction, not only of single buildings, but of entire villages which lost their architectural and environmental identity. This paper intends to analyse the typical Val Sangone architectural features, expressions of local building culture, and to provide useful guidance to promote the safeguarding of the few buildings still existing, through interventions aimed at preserving a heritage which, if not properly protected and recovered, is likely to go completely lost.

ID 049

*From Territory Patrimony to Food Innovation
Design*

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Barbara STABELLINI

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Starting from territory and from his elements of identity, strongly come to light the food question, which represent it not only as a primary good, but also like a global common language, a means of expression of community's traditions, a vehicle for interaction and exchange among different ethnic groups and cultures, a source of well-being and health for different populations target, both inhabitants (elderly people, youth, children, foreigners-natives) and city users (employees, visitors), symbolic element of socio-cultural identity and urban polarity and "attractor", even against new emerging polarities like universities.

The research exposed is founded on systemic innovation principles. It aims to the context relations, focusing it on existing resources (natural heritage, infrastructure, economic identity, target of residents, cultural heritage,...) that become the centre of design activity.

Through some specific case studies, the paper wants to show how an appropriate quali-quantitative territory fieldwork allow to highlight potentialities and strong points otherwise not easily identifiable. This process can enable new good design practices in a perspective of sustainable innovation and entrepreneurship, starting new requalification process in the areas involved.

The project developed are characterized by a tangible multidisciplinary approach that allows to learn and constantly experiment the complexity of relations at play and the strength among them.

ID 050

The Door of the Saints in Mercogliano (AV): B.I.M. model generation and flows in crowds simulation in case of earthquake

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In the town of Mercogliano (in province of Avellino), there is a Door called "of the Saints" close to the town hall square.

On the top of this door there are some fresco remains, dating back to the eleventh century.

The door of the Saints is among the five entrances, the one that has best withstood to the time, in fact, on five inputs to Capocastello only two remain visible.

In this paper will be described the procedure for a correct B.I.M. (Building information modeling) model generation and flows in crowds simulation in case of earthquake.

To the 3D B.I.M. digital model will be applied a subsequent procedure.

It will be developed a 3D application anch accessible on the web able to show the architectural/archaeological model appropriately retopologizzato in order to make it usable in realtime rendering.

Software agents will be modeled to simulate the people behavior in different states: stopped, walking, escape, interacting with neighbors (avoiding them, aligning to the group, reaching a vanishing point). Software agents will be programmed in C # so to have own local autonomous behavior. The interaction between all the local individuals behavior will bring a global crowd behavior that will be the simulation object that will attempt to cross the bow. They will be used Graphs and Dijkstra's algorithm to calculate the shortest paths from the position of software agent to the destination escape.

ID 051

High-strength cable systems for the seismic protection of historical domes: a multidisciplinary approach

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Seismic retrofitting of historical structures is a complex operation often needed to save such buildings. This requires background knowledge acquired from several research and application fields. Suitably designed strengthening systems are required that do not adversely affect the nature of the structure itself, in order to efficiently protect cultural heritage buildings against earthquakes. When put into practice, any interventions for cultural heritage conservation should be easy to install, non-invasive and reversible.

In this work, cable systems made of high-strength materials are proposed for the seismic reinforcement of masonry domes. Because of the significant influence of geometrical factors on the performance of the strengthening system, interventions must take into account the specific characteristics of the building, the stages of its construction, and its current state, which is inherently subject to variations. A cable dome system can also support self-diagnosis and re-tensioning tools in order to facilitate control and maintenance activities.

The structural response of the reinforced domes and their capacity to react to horizontal and vertical seismic loads is investigated and assessed through numerical simulations. Finally, a cable dome system is proposed for the relevant case of the Vicoforte Sanctuary, which contains the largest oval masonry dome in the world.

ID 052

Earthquake, survey and representation: the knowledge to enhancement of the architectural heritage in the city of Ferrara, world heritage

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The earthquake that occurred in 2012 in the Emilian territory has left many open questions that, soon after the first procedures for safety measures, required to be followed by a research method and knowledge based on surveys, the fundamental activity that leads towards all operations of restoration, consolidation and regeneration. The research group here presents a few study cases still in progress, drawing out the attention on the potential of an integrated approach to the use of original and advanced methods, processes and techniques. The study points will be: Integrated, advanced and scientific surveying Surveys and emergencies: The case of Santa Maria della Consolazione Church (Biagio Rossetti) Laser scanner surveys Data integration and comparison with image-based modeling tools From surveys to multimedia communication. The case of Palazzo Schifanoia Four interactive "stories" for Palazzo Schifanoia Digital museumification and filing.

ID 053

Embodying a new bio-climatic design in the rehabilitation process of the historical context of Aleppo post-war

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The current war in Syria destroyed most of the historical context of Aleppo, despite the presence of many reconstruction studies and proposals, but they did not take into account the obstacles, implications and challenges that faced the rehabilitation processes of the old city of Aleppo pre-war. Whereas, environmental design have not been considered during these processes. Balancing the relationship between local materials, building techniques, and climate conditions should be considered as the core of conscious and responsible approach for residential buildings reconstruction in Aleppo post-war, through employing and improving the local traditional architecture elements to serve local architecture and environmental circumstances. High performance buildings and sustainable design seek to reduce heating and cooling loads of the building. Therefore, well-structured decision-making process is the basis for finding an optimal integration of building components to maximize the energy efficiency.

The research aims to apply both quantitative and qualitative analysis for the decision-making process at early stage of the building design. The main question is how much the new bio-climatic conceptual design could influence the environmental building behavior and performance? Finally, different scenarios will be analyzed using green building performance technologies, which could lead toward proposing environmental design guidelines, in order to manage the deficiencies of the reconstruction processes in the historical city of Aleppo.



ID 054

Lithuanian wooden architecture Materials, ancient tools and constructive technologies for the safeguard of cultural heritage

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Traditional wooden buildings are a valuable part of European cultural and architectural heritage. The construction of wooden buildings presents a wide variety of technological, formal and typological types of buildings between various European countries as it is strongly influenced by the nature and availability of local materials and the cultural aspects of the various communities.

For the construction of wooden buildings in Lithuania were used all local natural resources: various species of wood, used for building construction, a compact stone for groundworks, clay and bricks, lime mortar, the dried moss useful for building insulation, and also straw and wooden shingles essential for roof cladding, etc. Also each region presents specific architectural features, which are often associated with different choices relating to constructive materials and decorative elements.

This study would analyze the wood species and other construction materials, traditionally used for cultural heritage in Lithuania (stone, brick, mortar, metal, ...) also study woodworking process, carried out by specific tools of local tradition, which were found in various Lithuanian ethnographic museums. Most of these carpentry tools still could be applied for the safeguard interventions using a still actual and philological handicraft techniques, during the consolidations, or recoveries and partial reconstructions.

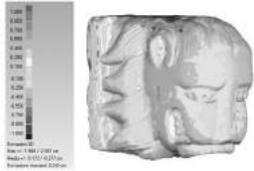
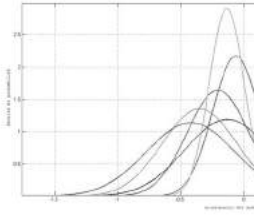
ID 055

Fired Ceramics from settlement of Monte di Montella. The pottery used in Rasola 2.

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Excavations of the settlement of Montella in the province of Avellino have been conducted by Prof. Marcello Rotili since 1980, in order to investigate the conditions of the medieval settlements of inland Campania. The archeological research carried out, has made it possible to retrieve a great amount of clay material, which covers a very wide time span. In this analysis the pottery from 1/90 trench of Rasola 2 have been examined, referable to the class of acroma fire, relevant to pottery used for cooking food. The analysis performed on the materials has not only individualized the types used, but also the type of food eaten by the inhabitants of the settlement in the early Middle Ages. The most discovered forms are the unglazed jars (olle) of modest size with traces of fumigation at the bottom and belly of the jar. They are distinguished according to some formal characteristics, for example the rim form, presenting sometimes traces of food substances inside. Alongside the jars, there are basin lids (catini-coperchi), bread baking trays (testi) and lids. The analysis of archeological data suggest a type of alimentation mainly based on cereal components in the form of soups and polenta in place of boiled meats. This relates to eating habits connected to social economic structures, which, on the whole, are rich in protein targeted to meet the nutritional needs of the population.



ID 056

NO FAKE survey? Reliability of photomodelling techniques for cultural heritage

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In relation to the latest earthquakes, the centrality of survey and representation of heritages to preserve, especially those assets of memory, culture and collective identity, are some of the most important methods to protect and conserve history.

In this scenario fits photomodelling, one of the contemporary frontiers of research applied to the conservation and promotion of cultural heritage, an extremely economical technique for the expeditious restitution of reality, which leads to the creation of three-dimensional models starting from the simple acquisition of photographs. Many measurements techniques have been proposed and used for the digitalization of reality, like laser scanner, high resolution camera, depth cam, thermal-cam, structured light 3D scanner, hyper-spectral sensor, multi-spectral cam and many others. Aim of the research is to understand the full potential offered by photomodelling and dedicated software, analysing the reliability of each instrument, with particular attention to freeware ones, and results.

An analytical comparison between photomodelling and laser scanner, tested in the relief of the "Doccione di fontana" of Galleria Nazionale dell'Umbria, guarantees a first measure of the reliability of instruments. Comparison of 3D models is explained using two different criteria, a spatial one and a surface one, comparing the reference mesh and extrapolating data relating to the distribution of deviations between elements that compose models. Photomodelling is a suited technique, capable to duplicate and preserve the historical legacy, by promoting an innovative form of communication and spread of culture.

ID 057

Modern Memory Palaces for L'Aquila, Amatrice and Norcia, Italy

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The Memory Palace — a method in which emotionally charged imagery, attached to locations sequentially arranged in an architectural space, seen in the mind's eye, triggers a desired memory — was invented by the Greek poet, Simonides, in 500 BC. However, it has profound modern potential. The mythic story of the Memory Palace is that the gods Castor and Pollux saved Simonides from the collapse of a palazzo, where everyone else was crushed beyond recognition. Simonides identified all the victims by visualizing the order in which they had been seated at the table.

Experts Frances Yates, Lina Bolzoni and Andrew Riggsby have studied the vivid imagery and spatial order that interact in the Memory Palace. But Andrew Riggsby has shed light on the modern relevance of the myth of Simonides: "I fear the story just may be true. It might be that the element of total annihilation in the story is significant. The story may be too poetic to be random."

A modern Memory Palace, complete with vivid imagery, spatial order and poetic significance, can serve those who have lost their architecture and streetscapes to earthquakes in the towns of L'Aquila, Amatrice and Norcia. If they preserve their cultural patrimony via Memory Palace techniques, and through tangible, aural, visual and architectural cues reinforce their imagined triggers in sites under renovation and reconstruction, they can regain and sustain their cultural bearings as they rebuild and restore their towns.

ID 058

Rehabilitative detention and building rehabilitation:
an “open prison” in the Industrial archaeology Sicilian heritage.

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Italy has the second-highest level of prison overcrowding in Europe. Since 2013 with the “Prisons plan”, the state has provided for the creation of additional prison accommodations, trying to reformulate the techniques of punishment.

With the ruling in the “Torreggiani and others vs. Italy case”, Italy was condemned by the second section of the European Court on Human Rights in Strasbourg for violating article 3 of the European Convention on Human Rights (ECHR). Nowadays the emergence of Italian prisons does not seem resolved.

So, it's necessary to find new opportunities for ensuring a period of rehabilitative detention by the use of decentralized and urban low-impact areas. Sicily and the other Italian regions are rich of old buildings and stone wells, an integral element of the charming landscape, what remains of the industries that were the protagonists of the world economy for the last centuries. The project presented is inspired by a detailed research on the historical and social dynamics of the economy of the sulphur, a work carried out in order to deepen the diachronic evolution of Grotta-calda Mine in Sicily.

Starting from the acquired knowledge, the planning proposal of an “open prison” was advanced for the recovery and the rehabilitation of architectural factories, an institute designed as a community for 57 inmates involved in agricultural activities in the surrounding lands and products processing inside the prison.

ID 059

Villa San Giovanni (RC) 1908: from the Big One to the reconstruction. A museum of the city between the project and the preservation of memory

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A hundred years have passed since the Big One, that destroyed the city and the town on the Messina's Strait. A consideration about the architecture "beyond the building", we inspired is to think once again on this topic.

This time, the reflection is focused on Villa San Giovanni, renown today only for the alternate events connected to the Strait's Bridge.

This is a small town with a glorious past of promises, today forgotten for the most part. However that, thanks to a council archive reconstituted just now, give us the richness of a really atypical environment for these territories.

An ante litteram industrial small town, Villa San Giovanni at the end of the XIX century hosted several mills for the production of silk and the social state was very advanced thanks the dignity of the women's job, first animators for the operation of the silk's production.

After the earthquake of the 1908 the town's happenstances deeply changed. The project of reconstruction, stocked in the council archive, showed a middle class customers, well-read and affluent, interested to the social, economical and urban recovery.

Today, after an hundred years since the reconstruction, we want to promote a museum place which revokes the memory of the Cultural Heritage of the Reconstruction of Villa San Giovanni, of its hamlets and of the bourgeois houses designed immediately after the earthquake.

Though the digitalization of many projects, we realized some models that constitute the digital 3D scene suitable to an approach for the Cultural Heritage, missing in part or intensely modified, hanged on the emotional and sensitive involvement.

ID 060

Italian waste management legislation between environmental impact and right to health: the case of Acerra's waste-to-energy plant

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Italian waste management legislation had a strong development through the transposition of the guidelines disposed by EU principles in matter of environmental protection (i.e. polluters pays, prevention and precaution principles). Legal sources taking action on this matter are numerous as well as the involved institutional actors; nevertheless, despite such significant regulation, the southern part of Italy has experienced a real waste crisis in the last decades due both to local authorities' inactivity and to organized crime's interests in waste management business.

All of this has led to severe consequences not just on the environment and local populations' health, but also on the image of the area. Videos of waste piles dumped on cities' streets have been shown by national and international media for a long while, which did not involve the prompt adoption of any kind of long-term measures by the competent institutions.

Currently, the institutional solutions adopted to improve the management of waste cycle treatment are several, although they pursue the same purpose: obligation for separate waste collection, awareness campaigns on recycling importance, restoration of dangerous landfill sites and, finally, building of waste-to-energy plants equipped with the most advanced technologies for health protection with low environmental impact.

The present work, indeed, also analyses the case of Acerra's waste-to-energy plant, subject of heavy disputes by local population.

ID 061

The role of new types of urban green for the environmental regeneration of the contemporary city

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The cities in which we live are always more overheated for the anthropogenic effect linked to the general process of warming of the climate, but also because of their conformation, of vehicular traffic, of mineralized materials, and - in particular - of the decrease of the relation between built heritage and vegetable biomass . Instead the cities that have maintained large green surfaces inside them, have pleasing environmental conditions, because the vegetation, as well as improving the climate, filters out pollution, absorbs noise, increases biodiversity and contributes to many recreational, cultural and educational activities.

Since the seventies of the twentieth century, a new sensibility emerges on the human-nature relationship which takes the ecosystemic logic as one of the main guiding elements of environmental change on different scales: the green systems are starting to be seen as focal centers of the environmental regeneration of the city , both in the recovery of built heritage that in new buildings. In the last thirty years the structural integration of the green with the building envelope was a new challenge - even technological - for the project, which is outlined with green walls solutions, "green skin", vertical green, green roofs, etc.

The paper aims to illustrate the new urban green types, designed as a microclimate control tool of urban areas in order to improve the conditions of environmental and psychological wellbeing, especially in high-density residential areas and also to highlight the critical issues of a project culture which is not always able to fully control the new technological solutions of detail.



ID 062

*Towards an index definition of urban vulnerability
for the conservation and seismic retrofitting of the
ancient centers*

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The paper aims to analyze the peculiar relationship between urban-architectural conservation or requalification of cultural heritage and the need to achieve, in ancient centers, high levels of security against static and dynamic loads. In addition to the structural vulnerability, defined in literature, the study supports the innovative concept of “urban vulnerability”, conceived as the interrelation between urban fabrics and each building.

This vulnerability depends on many factors that may be related to the characteristics of settlement sites. In fact, these ones present various criticalities due to geomorphological and seismic characteristics; to building materials and spontaneous building techniques; to the sequential stratifications; to the functional and structural changes; to contiguity of the constructions jointed in masonry building aggregate; to the morphology of the paths and open spaces. To define the concept of urban vulnerability, important issues are the road networks and the public spaces, representing escape routes, accesses for emergency vehicles and safe places for the collection of people. Distinguish isolated buildings from the aggregated ones or highlight the strategic buildings, which represent great crowding points, are other important steps in the present paper.

The definition of different parameters to quantify an “urban vulnerability index”, in addition to that structural, will allow quantification of an overall vulnerability of historic centers

ID 063

The “Dreamed” Graphical Representation of Tragedy

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If we have news of tragedy: of disasters, of cataclysms, of disorders in a World that we believe ordered; fires, tsunamis, gales, etc.; it is above all because of these events today we have news through representations. Much more than through written descriptions, images represent these episodes in a more evident way; and - because they are images - visually more tangible or more concrete or more impressive in our memory. Wittgenstein: “The image is a model of reality.” However, these images were - from a certain point of view – “dreamed”. And, they were “dreamed” for, at least, two reasons: 1. A practical reason; 2. A motive of a philosophical order; more vague, but no less evident: Nietzsche: “As the philosopher behaves, in the face of the reality of existence, so behaves man, artistically impressionable, before the reality of the dream; He likes to contemplate, and looks attentively; [...]. And it is not only the pleasant and joyful images that you experience in yourself with that unlimited understanding; Also the grave, melancholy, sad, somber, sudden impediments, the impositions of chance, the anxious hopes; In short, the whole “divine comedy” of life with hell [...] It is a dream! I want to continue to dream it!” .

ID 064

UNESCO - Cultural Heritage Protection Handbook and Core Principles

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Friends of Cultural Heritage (FOCUH) located in Istanbul, Turkey celebrated the 10th anniversary of its establishment by translating “UNESCO-Cultural Heritage Protection Handbook” from English into Turkish with its own means in 2016.

The publishing work was crowned with an authorization to use logos of UNESCO Headquarter and of Turkish National Commission for UNESCO on the publications.

“UNESCO - Cultural Heritage Protection Handbook” is listed below.

- 1-Security at Museums,
- 2-Care and Handling of Manuscripts
- 3-Documentation of Artefact's collection
- 4-Disaster Risk Management for Museums
- 5- Handling of Collections in Storage,
- 6-Securing Heritage of Religious Interest

Those handbooks expose core principles for the six topics of security at museums, securing heritage of religious interest, disaster risk management for museums, documentation of artefacts' collections, and care and handling of manuscripts and of collections in storage. Those principles are aimed to guide museums, religious heritage managers, museums experts, security officers, collectors and all others concerned. There is no doubt that applying those principles is less expensive, yet more effective than conservation and restoration activities.

In the first part of the paper, all handbooks and the activities realized to ensure the sustainability and increase public awareness of “UNESCO-Cultural Heritage Protection Handbook” in Turkey are summarized. In its second part “Security at Museums”, “Disaster Risk Management for Museums” and “Securing Heritage of Religious Interest” from “UNESCO-Cultural Heritage Protection Handbook” is explained in detail.

ID 065

Index of cultural heritage sustainability – aspects of conflict and war

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The literature on cultural indexes is growing in size in cultural based research. In our article we develop an index of cultural heritage sustainability with a particular focus on the war areas' indicators. The index is constructed based on the system of indicators of UNESCO – World Development Indicators for countries of Europe, Africa and Asia with a focus on Middle East. The index is composed of several dimensions: Registrations and inscriptions (12 indicators); Protection, safeguarding and management (23 indicators); Transmission and mobilization of support (11 indicators). We gather the »historical« data (for a / one year in the past decade) and most recent data, to be able to compare the situation before and after the present Middle East conflict. The index is constructed using common weighting and aggregation methods complemented by sensitivity analysis and graphical presentations (Nardo et al., 2008). Main research questions we address are the following:

1) Has the present Middle East contributed to lowering of cultural heritage sustainability in the countries, affected by the conflict?

2) Which of those countries were affected the most? 3) Can we observe any signs of similar deterioration in other war and conflict areas (e.g. Ukraine, Burundi, Nigeria, Sudan)?

In conclusion, we provide a reflection of the research findings and policy relevance of the study for studying effects of the war and conflict in the Middle East countries and other conflict areas in the world.

ID 066

Architecture & ships: a dangerous out of scale passage

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Subject of the research is the evolutionary discontinuity between architecture and ship that is detectable where there is a temporal and dimensional shift between the two poles. On one hand, in fact, you may experience a strong dimensional continuity with the historical buildings while on the other we are witnessing, especially in recent decades, to an increasing gigantism that generates absolutely out of scale vessels compared to the architecture reference.

This gap opens the way for further study on logistic and perceptive consequences, wanting to achieve a number of reflections on changing image of our cities and on any potential consequences, even very serious, as it has unfortunately already happened in some Mediterranean ports.

The research takes place in three stages: the first is oriented to the collection of graphic repertoire for the object of the study, identifying the categories and types of prevalent architectural organism in the chosen field. The second phase is aimed at the definition of architectural models and their prevalent declinations.

The third phase, finally, stands as a critical reading of cases in which any logistics, functional and morphological discontinuity may become critical within the reading of the perception and image of an urban setting.

Finally the research wants to express through case studies, expressed through symbolic images, the synthesis of the performed research.



ID 068

Representation and historical and procedural type as contribute to resilience

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If the resilience is meant as ability to return to the initial state after a disturbance that has alterate it, it is clear that this can be created by different factors, also depending on the origin of the phenomenon itself.

In relation to this, you can define the natural phenomenon catastroph and anthropic phenomenon disaster (see also the Inter Academy Partnership Document 8IAP), said Charter of Rom on the resilience of Art Cities to natural catastrophes) Consequently, what contributes to the recovery of balance can be natural or anthropogenic; here we deal of anthropogenic actions.

The role of rapresentation, both drawing (in all its forms), photography or video and computer praphics, is given by the ability to highlit, transcribe, interpret an communicate conemporary signd, traces of he past in support of actions to overcome the crisis and for the eventual preservation of memory, of what wa and/or of what is.

The role of historical and procedural type is the ability to use the signs and transcripts of rapresentation to read, understand and develop projects that will lead to rebalancing acts.

In conclusion, representation, historical and procedural typology are a key combination for reading space in order to form a virtuous process of widespread knowledge of the possible crisis phenomena and the foreshadowing of possible and appropriate human interventions, especially for the future.

ID 071

New business models of museum

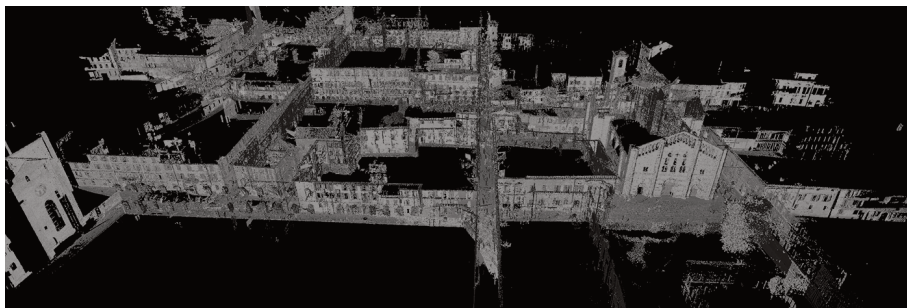
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The process of converting art and cultural heritage handi-crafts into digital formats occurs utilizing different techniques that dedicate part of the work to three-dimensional reconstruction of the artworks and handicrafts with an eye towards ensuring no damage or harm occurs, which could lead to irreplaceable losses for humanity.

The method of digitization of any kind allows for the management of large amounts of data to be transferred throughout the world utilizing the Internet. The foremost concern is ensuring the digitized version remains true to the original. It is also necessary to understand how to properly approach the digitization and modern communication technologies with regards to the protection of artistic heritage within the framework of museums and collections.

This effort researches the ways in which the discipline of design addresses issues related to the digitization of the world's artistic heritage and its dissemination and describes possible data discovery activities, aimed at developing a 3D scanning process with innovative and attention to the quality of the finished digital product, its communication and dissemination of museum that generate new business models.



ID 072

New generations of Digital Databases for the development of Architectural and Urban Risk Management

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Italian architectural scene is center of research and intervention campaigns for its preservation, due to its location in a territory of natural hazards which since ancient times have denoted the issue of transmission. Investigations performed a great variety of studies, through multidisciplinary approaches within centuries in analysis and monitoring, from environmental safety to damage and structural mechanisms. In time an archive of knowledge was structured, with a fragmentation and difficulty of consultation due to the lack of a union instrument of architectural morphology to scientific content.

The paper shows how Pavia, historical and university city, is starting a research that combines urban morphology to heritage preservation through the development of a 3D database, as a valid system of representation and container of heterogeneous data for archiving. The historical center of the city, between conservation and contemporary evolution, can experiment an N-dimensional database of information, where the drawing is basic tool to represent complexity of systems and the model, result of laser and photogrammetric survey, becomes a graphic interface to transform buildings in informative containers for seismic, architectural and environmental monitoring actions. 3D modeling can generate new frontiers of interaction between city and users, and creates in Pavia the bases to design a smart city, building the groundwork for new protocols of conservation and planning.

ID 073

Notes on the qualitative assessment of the seismic vulnerability in the historical centers through historical series and archival documents. An application case in southern Italy

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The paper proposes methodological notes on the qualitative assessment of seismic vulnerability in historical centers, derived from the exegesis of the historical series on earthquakes and of archival documents.

The study of seismic effects suffered in the past by a historical site, allows an evaluation of the local character of seismic motion, the maximum historical intensity, the expected intensity, and the sensitivity that the building fabric has to respond to the earthquake.

The research of historical data is a first essential action to achieve a local seismic history, a knowledge of earthquakes over the centuries in the chosen area and damage on the historic fabric.

The study has found application in the historical center of Cosenza, and analyses have provided a knowledge base on historical buildings (evolution of formal and construction types), together with notes on the effects of the earthquake, evaluating the capacity that buildings have to respond to earthquakes.

From documentary sources and from a comparison with historical maps the damage caused to heritage of interest and by particular urban areas was deduced.

From analysis of the effects we deduced the greatest intensity occurring in the site, the expected intensity, the identification of vulnerable areas and risk elements.

ID 074

Social and ecological issues in the urban open spaces regeneration

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There are many abandoned green areas in urban contexts and this aspect deprives the city of a resource that, if treated, would lead to benefits so as to improve the aesthetics, the attractiveness and, above all, the livability of each district.

Having a neighborhood that has green spaces created depending on the needs and desires of the citizens, is to have a collection of many territorial portions that are able to meet the demands of the citizens to achieve an improvement in the quality of life, as well as in the perception that each inhabitant has of the urban and social context in which he lives.

This work deals with the requalification of three areas with poor ecosystem-environmental quality located in Maddaloni, Campania. The requalification intervention allows not only to serve three nearby structures with specific functions, but above all to create open spaces where activities could be carried out, which have caught more and more the interest of the citizens. These activities are related mainly to the care of the environment and the city's green areas, but also to the necessity to involve the citizens in the decision process for transparency and active sharing. A space that the citizens have helped to create is a space that they will consequently have a strong desire to live and care for.

ID 075

When the culturale heritage can not be physically visited

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The word "disaster" can imply different meanings, and, consequently, different effects on cultural heritage.

Of course, earthquakes and natural disaster simply destroy cultural heritage or they damage it so much that it becomes inaccessible for security reasons from the point of view of visitors.

In the same time, the uncontrolled management of tourism can require a drastic reduction of visitors for safeguard reasons, from the point of view of heritage.

Figuratively, also an economic crisis can be a "disaster". It generates social injustice (the cultural growth is more and more a privilege: traveling requires an adequate standard of income, and many people do not have.).

The result is, in all cases, that cultural tourism, nowadays as time ago, is not "for all".

Technology can help in all that cases. Even if we are aware that real tourism is the better solution in order to know places, peoples and cultural heritage, this paper shows how virtual tourism, if well organized as experience, could (partially) compensate for that, and it shows how necessary technology is already available.

Basic keywords are immersivity and physical movement. Tools like "walking mouses" can nowadays really offer a holistic experience, even when the real places are not available for visit.

ID 076

From the aesthetics of recesses to the aesthetics of elasticity

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When analyzing the past fifty years of architectural production in Recife, we find a significant transformation in the local architectural culture. We can sum it up through the identification of three moments: aesthetics of recesses, aesthetics of phantasmagoria and aesthetics of elasticity. These three periods of architectural production, far from being distinguished by mere formal aspects, express deep changes in the way of thinking and making the architectural object, to the point of questioning what we could call local architectural tradition - including architectural practice and also the way projects are thought of and taught in architecture schools.

We will show that these transformations are not solely the result of internal decisions to the field of architecture, but they join together and respond to social, economic and technological demands, and, as a rule, precisely because at times they question the architectural tradition and cause a substantial urban modification in the city's landscape, they bring some sort of uneasiness to those that seem to be their main players: the architects.



ID 077

The Botanical Garden of Naples green barrier between the urban scenery and the Capodimonte hill

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His essay "Sull'embellishmenthe is capable of the city of Naples" of 1789, Vincenzo Ruffo with full Enlightenment expression, notes the importance for the progress of the city, to have a botanical garden, including it among the architectures that can renew the Neapolitan urban structure. The idea, once the signing of Joseph Bonaparte of the Executive Decree of foundation of the Royal Botanical Gardens. It was built at the foot of the Capodimonte hill, where years ago there arose the Bourbon Royal Palace, on the urban axis limit of Via Foria, built in the eighteenth where was the valley that enclosed the ancient center of the city, valley that housed the torrential waters coming from the hills of the Star, infrascata, Veterinary and valleys of Health and Virgin. Today the Botanical Garden has about 25 thousand copies of 10 thousand different species from all over the world; The park covers a surface of 12 hectares functions as a green diaphragm that separates and unites the urban landscape and the landscape of the Capodimonte hill despite being ruined by construction is still an element of the Neapolitan landscape characterized by a high natural interest which invests more than Real Wood of Bourbon Royal Palace also agricultural areas most advanced, was made concrete only in 1798 when Ferdinand IV commissioned the project, to be built In near the Albergo of the Poor.



ID 078

Facing Disaster – Tracing reactions of the population on the Earthquake of 1755

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If there was any moment where despair has been felt with great intensity in Portuguese society it has been during the earthquake of November 1st, 1755, in Lisbon.

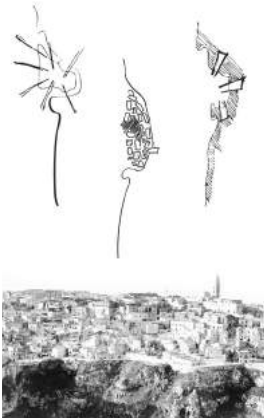
The Lisbon earthquake shook much more than the city and its buildings: it shook the faith of the population. The fact that the earthquake occurs on a holy day, raised many important religious issues across Europe. For the religious mentality of the eighteenth century, it was a manifestation of divine wrath.

The painter Glama Ströberle, an eyewitness of the tragedy, captured the collective trauma of a terrorized population by the devastation and horror of the earthquake on his painting "Allegory of the 1755 earthquake in the City of Lisbon".

Using the above indicated painting as case study, we intend to identify the several emotional states of the population of Lisbon at that time of tragedy and the way the population react and faced this disaster.

With this paper we will present our understanding on the representation of emotional states and reactions facing disastrous events in the age of Romanticism and illustrate the way how this particular event could have been perceived in that time.

As part of our research project on Harmony and Proportion, it is our aim to foster academic reflection on the importance of the memory and the cultural identity of each space, as elements able to foster and develop avenues for a development of a new and current architectural language by understanding its past.



ID 079

Strategies of architectural interventions in world-heritage sites: the case of Matera

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The city of Matera, included in UNESCO list of world-heritage sites and European Capital of Culture for 2019 is characterized by the Sassi, the historic center of cave dwellings.

A remarkable question arises because of the phenomenon of tourism, with consequent transformation of the historical center into a museum: which could be the contemporary project guidelines valid to limit risks such as the loss of identity in cities named world-heritage sites?

We propose to create an urban laboratory source of new proposals for Matera, analyzing fields as:

Building atop the built, that is, contemporary living spaces within historical sites should be investigated through architectural and urban design, in order to find strategies of intervention for a necessary balance between conservation and development.

Construction of the border, through nodal buildings placed along the limit imposed by the natural configuration of the site, which became visual and functional landmark in the landscape, thus upgrading the traditional point and line system.

The contemporary excavation, to interpret the ancient form to inhabit the Sassi, based on the subtraction of the tuff rock to create carved space, which even influenced the manner to shape built architecture and urban voids.

Integration by means of infrastructures, with the aim to connect the old town with the expansion districts, enhancing the existing rail network. It is intended to overcome the concept of "limit", both urban and infrastructural.

ID 080

Integrated survey, emergency survey

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In May 2012, the Emilian territory were suddenly overwhelmed by a seismic sequence of historical significance that has deeply affected the area. A critical event that uncovered elements of fragility and crisis in a highly structured settlement. Buildings of historical and architectural interest as churches, bell towers, fortresses or municipalities and urban centres have suddenly lost their identity, showing the fragility of the local memory. It is not only the logic of reconstruction that led the actions after the disaster, but also the will of a regeneration strategy, which is the starting point of a model of innovative development, quality and sharing.

From the structural damages evaluation to the preservation of the territorial memory, several campaigns for integrated survey in emergency situations were performed thanks to the collaboration between the laboratory DIA-PRem/TekneHub of the Ferrara Technopole (Construction Platform of Emilia Romagna HTN) and the Regional Directorate of the Ministry. Below a short list of 3D scanning activities and data collection on:

- Bell tower of Buonacompra, Bell tower of Reno Cento and Town Hall of Sant'Agostino (Ferrara district);
- Municipal building and historical residential fabric, Tower of Carabinieri, Cathedral, Church of St. Catherine, Church of Fossa in Concordia sulla Secchia, Bell tower of Novi di Rovereto, Bell tower of Church of SS. Senesio and Theopompus in Medolla, Campanile di San Martino di Carpi (Modena district);
- Cathedral of Pieve di Cento (Bologna district).

ID 085

BIM application in infrastructure project in the reuse of historical cities

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The development of Smart cities in the old town are one of the most important aspect developed by the European Municipalities. To envelope a smart city in old town, the municipality must design new infrastructures for transport, subway line, underground parking areas not less design new technological systems for lighting, heating-cooling and other services. These aspects meet lots of interferences with historical buildings and existing infrastructures during design, construction and for the facility management. In this way, the BIM Modelling of the existing and old town help designers and owner to envelope new project to re-green the cities or to transform them. The example shown in this article is about the new metropolitan station line of Copenhagen. In this work we suggest a process to envelope the survey and the base model, the BEP proposed and a method to represent:

- 3 D for the modeling and analysis of the city, MEP, Structural and architectural modeling for the new metro station.
- 4D for the association of all the model elements to a specific temporal phase during the construction phase for the coordination of the several subcontractor companies regarding excavation works, tunneling, casting, reinforcement and electromechanical works regarding station and tunnels.
- 5D for the computing and estimation for all the model's parts works.
- 6D regarding the sustainability.
- 7D regarding the underground facility and monitoring management.

ID 088

Rigid body collapse of structures

Fabio DE ANGELIS

Antonio GESUALDO

Antonino IANNUZZO

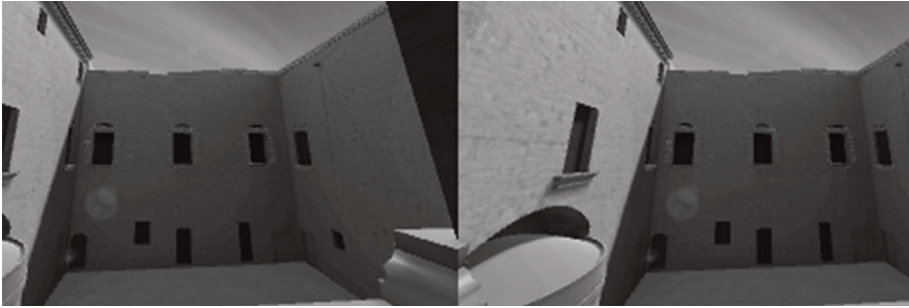
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Since a long time interactions between buildings and earthquakes have been studied. Several methods have been developed to represent the behavior of buildings under seismic action, with different levels of accuracy. Although the development of calculation tools, nevertheless simplified approaches are always welcome.

In the case of examples of collapses due to earthquakes in which there is evidence a rocking-block behavior of the structures, namely rigid movement of the block with respect to the ground, the so-called "rocking-block" model can be successfully employed to understand the building behaviour. Following the seminal work by Housner in 1963, the problem of the motion of an oscillating parallelepiped-shaped rigid body has been widely investigated. The main issue addressed in this and other earlier studies was the performance of a structure in the framework of the a rigid block dynamics, during an earthquake, assuming the block to be a building.



ID 089

Real architectures for virtual worlds

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Cesare VERDOSCIA

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The study illustrates the potential of virtual reality to make the architectural space can be visited in a completely immersive than the digital technologies used in the past, producing an interactive virtual environment, modeled in three dimensions, and implemented through the use of Virtual Reality.

It was discussed the possibilities that this technology provides for the representation of architectural heritage in the educational and tourist sector and to preserve and make known altered or more existing environments.

Before the investigation has been studied how the brain interprets the stereoscopic images observed in the optical viewer, under the illusion that what we observed is real. This preliminary study was required to produce a compelling visual experience.

An important element of the technology under investigation is the possible use by anyone who can interface with the digital world, through an optical viewer, to view the proposed architecture in VR.

The use of Virtual Reality to reproduce, describe and analyze the architectural spoken, has been applied to the Castle Stella Caracciolo in Palagianello (TA), a national monument since 1924, making the interactive virtual environment and highly "immersive".

ID 090

*The preservation of memory to restore the matter.
Approaches to survey and documentation of heri-
tage at risk*

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Cultural Heritage under risk or in emergency conditions is an increasingly common contingency. Critical issues related to preservation highlight the topic of conservation of matter, not only as transmission of heritage to future generations but also as a search for new intervention strategies and design of the existing, and conservation of memory, as cultural choice to protect those intangible values socially shared.

The survey and documentation of heritage become the essential support to the achievement of higher levels of knowledge and awareness: the possibility of gaining archives of the "geometric memory" of the historical and architectural heritage opens up new possibilities for the protection, conservation, restoration, up to the controversial discussion about "where it was but not as it was".

The paper will present a comparison among different experiences of survey and documentation of heritage in states of emergency or hazardous conditions through different methodological approaches. From the survey of city centers affected by the earthquake in Italy to documentation of urban transformations of Jodhpur, India; from the survey of the archaeological excavations in the heart of Mexico City, up to new strategies of documentation and conservation of Brazilian modernist architecture.



ID 091

Palmanova, conservation and metamorphosis

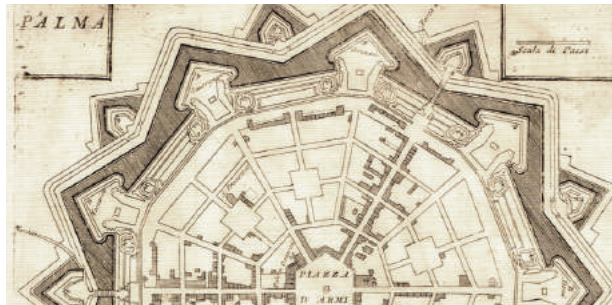
Riccarda CANTARELLI

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Cultural Heritage under risk or in emergency conditions is an increasingly common contingency. Critical issues related to preservation highlight the topic of conservation of matter, not only as transmission of heritage to future generations but also as a search for new intervention strategies and design of the existing, and conservation of memory, as cultural choice to protect those intangible values socially shared.

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ID 093

The representation of Civita di Bagnoregio, the city (not) dies.

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The research addresses the issue of improving and maintaining through the relief and the subsequent return of some portions of the historic buildings fabric characteristics of Civita di Bagnoregio, one of "The Most Beautiful Villages of Italy" in the province of Viterbo. The methodology, first explores new forms of reading the urban morphologies outlining qualifying and critically interpreting the architectural vulnerabilities (mainly due to hydrogeological threat) through traditional pictorial, graphic campaigns and surveys on site -in order to formulate an abacus architectural elements, environmental and landscape-, on the other, through the use of digital, proposes an innovative approach than traditional methods of finding investigation. The techniques used in the research consists at the integration of physical and analog and digital data, to arrive at the development of three-dimensional semantic models and explores the village portion of a choice. The digital "constructive" approach allow the "materialization dimensional" selected example, to propose a recovery guide and enhancement over time and for a new reading of the homogeneous and characteristic elements present in Civita. In conclusion, the most interesting aspect that justifies in-depth study and three-dimensional reconstruction of some architectural events of the village, as the real possibility of ensuring, enhancing the existing cartographic documents, a long-term digital storage of "places" bringing back the concentration on the issue of protection and preservation of a historical and architectural heritage of exception.



ID 095

*The BIM model for the study of historical buildings.
"Palazzo del Sedile" - Bari*

Cesare VERDOSCIA

Mario DI PUPPO

Riccardo TAVOLARE

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The survey of a historic building has always required, from one hand, a historical analysis concerning its construction and its evolutionary events and, from the other hand, the awareness and the two-dimensional or three-dimensional representation of its formal and material consistency.

These two phases have been considered sufficient to provide a solid basis for the preparation of recovery and restoration projects. Indeed, only a correct approach to knowledge and an accurate interpretation of its geometrical and technological characteristics, can reveal the "reasons" of its construction and guide its transformation (Bianchini, Inglese, Maiorino, Senatore, 2016).

The current contribution is aimed at verifying how much the forms of representation's renewal, proposed by the multidimensional model defined in the BIM environment, can positively guide the phases of a historic building's survey as a mean of its transformation (Di Giuda, Villa, 2016). This hypothesis intends to confront the issue of reliability of the model and the related relapses in the representative environment, the relationship between the degree of the detection's accuracy of the actual physical form and the level of detail of the modeling, by mediating between the established habits, the regulatory dictates and the possibilities offered by new technologies (Lo Turco, 2016).

The case study concerns the most significant architectural monument in the urban scene of Piazza Mercantile, core space of Bari's old town.

ID 096

Seismic safety evaluation of the Door of the Saints in Mercogliano (Av)

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The Door of the Saints is the only one, among five accesses to the ancient village of Mercogliano (AV), which has better resisted to the time elapsed, to weathering and seismic events.

A pictorial representation placed on the upper portion of this masonry arch and dated back to XI century shows Flaviano, Modestino and Fiorentino Saints.

The Door and its painting are not well preserved because they are unprotected and continuously exposed to the weathering agents (they have not a coverage and then are exposed under sun, wind, water and snow).

The seismic safety evaluation of this element is a strategic and fundamental topic because the Door is the lower end access in terms of public security of Capocastello.

The structural quality assessment of the masonry arch is determined by a first inceptive and in-depth knowledge phase. This is integrated by data and information coming from several architecture and engineering disciplines (structures, survey, history, urbanism, technology, architectural renovation).

The B.I.M. procedure (Building Information Modeling) to create the 3D structural model of the masonry arch necessary for the structural analysis by Midas/GEN software will be described.

In the 3D structural model each element is identified under own geometric, materials, mechanical characteristics and their behaviour under dead, live and earthquake load.



ID 097

Fire And New Beginnings: Memory And Regeneration In The Chiado District Of Lisbon.

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On August 25, 1988, Lisbon was devastated by a violent fire that partially destroyed Chiado, one of the most characteristic areas of the city centre.

The fire destroyed significant historical buildings such as the Grandella department store, built at the end of the 19th century by Francisco de Almeida Grandella, an enlightened industrialist who contributed towards the development of the city with the construction of textile factories, shops, housing and infrastructure aimed at improving the life of workers.

In the aftermath of the fire, while the municipal authorities decided upon the best strategy to adopt, a number of key individuals discussed the future of the devastated zone, contributing to a public debate centred on two opposing positions: the complete restoration of destroyed buildings returning them to their pre-fire state or, alternatively, the construction of new buildings in contemporary languages that rejected the historicist pastiche.

The assignment of the reconstruction project to the architect Álvaro Siza put an end to the debate and gave rise to a project, controversial at the time, which presented a solution based on a compromise which made neither a radical break with the past nor proposed the complete rebuilding of the pre-existing structures.

ID 098

The Renovation Of Santa Maria Di Collemaggio Basilica: The Intervention On The Nave's Column

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Lavinia CATELLACCI

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This work concerns the renovation of the nave's columns of the Basilica di Collemaggio (AQ), seriously damaged during the L'Aquila earthquake in 2009. The intervention consists of three main phases: the unloading of the columns, the retrofitting intervention and the reloading. The procedure has to be developed altering the existent state of stress as less as possible, in order to avoid the occurrence of additional damages to the columns and to the above masonry wall. To assess the mentioned condition, a detailed Construction Stage Non-linear Analysis is performed on a 3D FE model of the nave's wall, realized through the software Midas Fea. The geometry is modeled through the acquisition of the results of a laser scanner survey in order to faithfully reflect the Basilica's irregularities. Moreover, elastic-brittle constitutive laws are assigned to the model's materials to reproduce the intrinsic non-linearity of the masonry. The results of the analyses are then attentively analyzed, monitoring the eventual occurrence of cracks or excessive displacements. The stresses never exceed the materials' ultimate strengths throughout the whole procedure. Finally, a comparison between the numerical results and the values measured during the intervention is executed to validate the model. An acceptable deviation between the values is observed and, therefore, the reliability of the model is assured.

ID 101

Cultural assets and earthquake disasters: the evaluation of the damage

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The effort to identify adequate evaluation methodologies of the damage suffered by the cultural assets in consequence of earthquake disasters, appears more necessary than ever, considering the frequency and the intensity of the phenomenon, in the last times, in Italy. The subject falls within the broader thematic of the attribution of a “monetized” economic value to the cultural assets, widely deepened in the appraisal and evaluation disciplines. In this perspective the article aims to an exam of the principles and the evaluation methods (both ex ante and ex post) for the monetary assessment of the damages caused by the earthquake disasters to the cultural assets.

ID 102

Habitat and identity: virtual reconstruction for the preservation of knowledge

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Laura FARRONI
Giovanna SPADAFORA
Camillo NUTI
Silvia SANTINI
Matteo Flavio MANCINI
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Italy

Among the activities dedicated to the historical architectural heritage damaged by latest earthquake, the one which we are treating has as its objective the virtual reconstruction of the partially destroyed monuments, carried out by means of 3D survey instruments and the procedures of the virtual anastylosis.

The aim is to contribute to the conservation of the locations and urban centers which risk being forever eliminated, re-assembling those fragments in situ through a study based on deep documentary and iconographic historical research, linked to a detailed analysis, obtained from the survey.

The proposed methodology has as its main purpose conjoining the reconstruction model, hierarchically organized and composed of individual 3D elements, with a congruent "semantic" model. The latter is constituted by a multi-level database, in which for each element the necessary data for its reconstruction is present (dimensional data, data regarding structure and building techniques, historical documentation, procedures and methodology).

The team, drawing and survey researchers and structural engineers, intends to develop a hypothesis of virtual reconstruction that evidences, among others, those aspects which most closely correspond to the actual structural and building configuration. This would be applied to a case study selected from among those previously monitored in those areas hit by the recent earthquake.



ID 105

Conservation Digital Report: a digital system for the documentation of Cultural Heritage in case of disaster

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The "documentation", in general terms, is the need to gather informations collected for a specific topic so they can be available now and in the future. Obtaining the information is a process that involves many steps: the study, the analysis and the elaboration of the information; all these processes expand and transform the common conception of the term, as not only a mere recording of a phenomenon. In this sense, the documentation becomes an operation "dynamic", as the basis for further considerations on the object analysed.

In case of disasters or emergencies, if the risk of cultural heritage loss is considered as criteria for the identification of the operational priorities, the knowledge of its distribution in the territory is useful and necessary to the development of sector policy and for interventions planning in regards to land-use, land protection and land conservation.

The most remote origin of this application can be found in the concept of "preventive restoration" elaborated by Cesare Brandi in his work "Teoria del Restauro". This concept can have a concrete feedback only in the prevention of degradation through the control of external stresses and programmed maintenance of cultural heritage.

ID 106

Sites of cultural building heritage - Proposal of a method: surveys and expeditious evaluation techniques for seismic vulnerability assessment using the building and urban aggregate scale.

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Bernardino CHIAIA

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Research coordinated by ISEG Department of Politecnico di Torino and Architecture Department of Roma Tre University.

The interdepartmental research aims to develop a knowledge tool that performs a seismic risk analysis of the building heritage where empirical-experimental, logical-deductive and analytical data mutually contribute to achieve a valid and efficient outcome, also in terms of graphical representation and aware diffusion.

During our research we assume different phases in relation with uses and functions classification of the heritage building. The first phase can be mainly inspired by geometrical deductive considerations; the next second phase, while remaining an expeditious analysis, must be based on cognitive elements predominantly founded on analytical estimations. This paper refers to second level of analysis, the survey of quantitative data. This operation, as documented in a specific case study (porticoed buildings in the city of Savigliano, Italy), is based on the processing of pictures and on the organization of 3D photographic models, susceptible of numerical queries. Experimentation also foresees the organization of multirelational database where obtained information provides nD models merged with geological and geotechnical characteristics of the site. This scientifically organized data collection allows the preparation of mechanical and behavioral patterns and models, able to positively respond to analysis of seismic risk and related protection.

ID 107

*Unexpected developments and urban morphology.
The case of the "palazzi spuntatori".*

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The primary relationship between morphology and architecture is based on the orographical form of the territory. Its features have strongly developed towards enhancing of specific architectural typologies, characterized by common design solutions, much to classify them into specific "families", typical of a site or a territory, so as to become autochthonous.

Naples, for its morphological features, has been a prolific forge of architectural typologies. Among the others, we can certainly include the architectural typologies called "palazzi spuntatori". With this definition - difficult to translate for different contexts - we identify a specific group of architectures, much heterogeneous but all characterized by some access to different elevations.

These buildings, thanks to the public use of private property, take up an infrastructural function like an oblique path that runs through the discontinuous Naples orography.

Although this paper, part of a larger research, deals with about a widely studied territory, a new methodical and comparative reading of these particular architectural typologies, implemented through the instruments of representation, provides new insights for a critical analysis about the urban development.

ID 108

A foundation town grown by an earthquake: Cerreto Sannita

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The Liguria case will be compared, on various issues and scales, with the case of Cerreto Sannita, a "foundation city" with regular plan, entirely rebuilt by G.B. Manni with "earthquake-resistant" criteria, after the earthquake of 1688. Prestigious is the 1724 witness of P.F. Orsino, the future pope Benedict XIII. In his memoirs he describes the earthquake as a great misfortune suffered by the city of Benevento. He bestowed generous donations to rebuild religious buildings. In Cerreto Sannita where one half of the inhabitants died, alive is the testimony of the bishop of G.B. De Bellis, but also the memoirs of V. Magnati and that of V. Mazzacane entitled "the earthquake of Cerreto of June 5, 1688. Witness of a nun of the convent of the Poor Clares" ("Samnium" 1953). N. Ciaburri, urban planner, recalls that among the measures there are broad walls up to a meter capable of withstanding horizontal displacements; vaulted high resistant underground cellars; a distribution of the rooms on the ground floor to facilitate the nocturnal evacuation in the houses with kitchen upstairs; wide streets to facilitate the passage of the rescue and relocation of three main squares in the south and north central parts of the town to collect survivors. Negative element is the placement of the houses along the objectively unstable slopes of the two rivers Turio and Capuchins. Reconstructions of mid '900 with reinforced concrete floors have burdened the structural philosophy of 17th century interventions.

ID 110

Structural elements on the architecture of a mystic landscape

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Mystic Landscape Architecture will refer here to geological phenomena, comprising zoomorphic and anthropomorphic shapes, encircled by anthropic compositions, as rock basins, menhir type rocks with inscriptions, dolmens and walling groups of diverse styles. Such architecture is dispersed through 3 geographical areas covering about 8 square kilometers in its totality, while presenting a dense type of information, not yet classified due to its different nature.

Because the object of study (post doctorate project), only involves the basins (180), they are being measured and positioned through topographic methods. However, departing from the principle that architecture imposes a social and psychological influence in human beings, the study intends to depict possible correlations between variables like shapes, sizes and orientation of basins drain channels, in their relationship with the figures, and within the general matrix being designed (for application of factor analysis). To obtain reliable results, however, it is necessary to guaranty the general safety of the landscape as a conjunct, which is not being supervised and/or controlled. While waiting permission for archaeological research (4 years already), some of the sites are being prepared to facilitate access to tourism, as presenting a new type of landscape, unexpected in the Azores (allegedly discovered in XV century). In such circumstances, its vital integrity runs the risk

ID 111

The Knights of the Order of Malta and the emergency reconstruction after earthquakes of 1693: comparison between seismic events of the seventeenth and eighteenth centuries

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From the standpoint of Urban History, a comparison between the Sicilian area of Val di Noto and the Maltese area, both affected by the earthquake of 9 and 11 January 1693, was mandatory for a complete understanding of the historical context and in the absence of analyses that connect the event with the contexts of the affected towns in both territories. Given the geographical and cultural ties between the two areas, but especially for the common belonging to the Spanish state, it is interesting to outline the scenario that comes out as a result of the most devastating earthquake in the history of the Kingdom of Sicily and beyond.

The studies on the seismicity of the Sicilian territory have defined the broad event area, extended from the African coast to the northern Calabria. In the Maltese archipelago, compared to what happened in Sicily, the quake was probably of less severe intensity but still considerable. It appears therefore important to identify the main lines of Maltese architecture reconstruction processes, to be related, with appropriate distinctions, to the Sicilian picture of the events. In this regard, a number of documents in the Order's Archive help us to better define the scenario of relationships between Sicily and Malta in the immediate post-earthquake period, the aid and relief provided by the Knights of St. John to the Sicilian populations, the entity of the damages in the Maltese city and the steps taken by the Order to cope with the incident.

ID 112

The Park of Veio: Analysis of the historical landscape for the creation of the Geographic Information System and the Risk Map of archaeological heritage

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Massimiliano DE MEI
Laura Maria PADOVANI
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ENEA, in collaboration with other partners, is carrying out the RoMA project (Resilience Enhancement of a Metropolitan Area), funded by MIUR under the "Smart Cities and Communities and Social Innovation" Programme. Part of the project activities is related to the safety of natural and archaeological heritage of Park of Veio (Rome). ENEA, in collaboration with the Department of Architecture of Roma Tre University, has analyzed specific issues related to hydrogeological aspects of the area, through the characterization of the land topography and the prediction of possible floods. The main goal was evaluate the hydrogeological risk of archaeological and historical heritage of Parco di Veio. During the project activities, ENEA and Roma Tre University have realized a Risk Map, using the collected data organized in a Geographic Information System. This Risk Map will be part of a larger Decision Support System (DSS) that will allow to manage risk situations in the Area of Park of Veio, through an early warning flood system. The useful, interdisciplinary collaboration between ENEA and Roma Tre University in the fields of restoration and archaeological heritage, architecture, GIS, hydrogeology, physics, natural science and biology, as well as the study of the existing literature and the critical interpretation of the new acquired data, has made possible to achieve also an innovative reading of the historical landscape of the "Ager Veientanus" and of its transformations over time.



ID 113

Memory and representation, among contemporary ruins, debris and "disaster"

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To understand events and keep them in mind we have to elaborate them as representations, both personal and collective.

But what does that statement really mean compared to the complexity of contemporary urban-architectural scene?

How are scientific progress and development of the Information Visualization transforming our ability to perceive, detect and discretize the aesthetics related both to reality, impermanence and utopia?

How can we represent some critical aspects of contemporary life and detect the *modus vivendi* of its citizens?

How can we represent ruins, debris (thinking about a well-known title by Marc Augé) generated by today's technological space-time?

Finally, thinking about the keyword "disaster" suggested by the 15th "International Forum Le Vie dei Mercanti", how can we communicate aiming to trigger processes of protection and conservation (in order to pass on our stories to the future) of tangible and intangible legacy of the World Heritage?

The research addresses these issues proposing, in the form of a work in progress, representations of such phenomena introduced above; Elaborative and significant examples that offer fascinating and controversial ideas and projects, illustrations of the space-time representation of several conformations of contemporary "disaster".

ID 114

Audience outreach strategies fostering local networks.

New technology for the culture, the Royal Palace of Caserta experience.

Antonella DIANA

Royal Palace of Caserta
Italy

**Valerio BORGIANELLI
SPINA**

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Adding to the enhancement of the heritage of the Royal Palace of Caserta, the National Plan for the Heritage Education established the following objective: <The creation of a [...] system capable of engaging visitors in an educational and entertaining way>. To achieve this, collaborating with a variety of entities is critical to understanding the needs of the “public” who sometimes does not attend cultural exhibits and unfortunately does not recognize their relevance and role in society. Thus, an important partnership with two local stakeholders: the Centro Commerciale Campania and 012Factory for project “A Hunt for Contemporary Treasures” has been created. Utilizing new technology, “A Hunt for Contemporary Treasures” aims to outreach audiences who are normally unaware or uninterested in cultural attractions. As a main asset, the app Treasure Hunt has made it easier to target larger audiences and bring them into the fold of cultural activities while visiting the palace. With a variety of interactive questions, the Treasure Hunt app encourages and entices visitors to dig deeper into their experience, searching for details and visiting additional rooms while becoming culturally enriched by the material at the Royal Palace. Specifically, the main objectives that have been developed are: on one hand – thanks to the multilayered questions of the “treasure hunt” - to make visitor to spend more time in the different rooms of the Royal Palace; on the other to create the conditions that help them to “look for more” in the rooms/pieces of art, enjoying the maximum value of intellectual, cultural and emotional.

ID 115

Lessons in sustainability from Traditional houses for new architectures

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A study has demonstrated that traditional architecture practiced in Nefta responds to main principles of sustainability, like defined in the earth summit in Rio 1992.

Nowadays, many factors lead to the abandon of traditional architecture: The social, political and technological mutations. The flooding that happened in 1990 was the main cause of that abandon.

The study aims to learn sustainable practices from traditional architecture. This sustainability appears in the tangible facts by using local material and thinking spatial organization, by respecting the environment. Sustainability appears also in intangible practices of the actors, the kind of relationship established between them in designing, building or occupying the house. These practices are responsible, participative and cooperative.

Different graphical documents aid to study the sustainability manifested in the tangible practices. In addition, different interviews to different actors help the study of intangible practices in the traditional house.

ID 116

Earthquake 1755: Learning from ruins

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Knowledge, necessary to build the future may be achieved by looking thoroughly and in depth at facts and buildings that occurred in the past. In the occasion of the November the 1st 1755, a huge earthquake in Lisbon took place, destroying most of the city and provoking the death of 10 000 people.

Most of the buildings totally collapsed, others partially collapsed and fewer stood up, resisting to the earthquake. While the religious communities attributed the phenomenon of the earthquake to the “wrath of God”,- thus believing that the consequences of such an event were a true fatality,- the Marquês de Pombal, the first Minister of the Kingdom, had a very prosaic attitude, dealing with the consequences of the seismic occurrence, assuming that human intelligence had the skill and the right creativity to develop solutions that could limit the damages pertaining to earthquakes.

The Marquês de Pombal, immediately after the disaster, ordained the militia to enclose the affected area, not allowing that the owners initiated the rebuilding of their own constructions.

Afterwards, he called the military architects of the kingdom and told them to go downtown to observe the buildings that collapsed, those which resisted and the ones that partially collapsed, and he insisted that they should look and understand why those same buildings bore different responses to the impulses. The Marquis had the clear notion that Man can learn from the ruins.

In the present study, we aim at describing the conclusions that the military architects reached from the compared observation of the different types of ruins.

ID 117

Catastrophes: Chaos, Continuity and Renewal

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Catastrophes have always provoked rupture in the course of the evolution of Mankind, having been described in all civilizations, namely in cosmogonies that describe the genesis of any of these same cultures. They constituted marks in the memory of historical periods, brought destruction of cities and societies through the four elements: water (deluges), fire, air (cyclones, typhoons) and earth (seismic phenomena). The very myth of the Atlantis was described in the dialogues by Plato of Critias and Timaeus, thus defying the naval supremacy of Athens, representing the philosopher ideal state depicted in the Republic.

Catastrophes were depicted by artists such as Leonardo, that maintained considerable interest in the study of the nature of water (the concept of vortex being considerably cherished), of atmospheric occurrences (storms), and many other phenomena. Painters or engravers that followed tended to represent those events real or pertaining to a mythical past. Lisbon's 1755 earthquake inspired not only literary production, but also works showing Portuguese architecture (through characteristics of vernacular architecture from Flanders, from where many of those etchings were produced).

Relating these historic catastrophes to climatic changes of our times, we can establish many parallel circumstances that can be traced back to these dis-ruptures, as considered in time linearity and continuity, for they imply the peril of interfering with the actual wellbeing of society on the planet.

ID 118

Cave churches and hermit caves on the Amalfi Coast

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As part of the historic built heritage of the Amalfi Coast – full of buildings and boroughs known for their typical architecture and landscape features – less known but, definitely, equally emblematic of the close relationship between nature and artifice, are the cave shrines.

These are small buildings or natural caves that, from the ninth century, according to some, were used as places of worship by hermits in search of ascetic space. On the basis of a second and more reliable hypothesis, these buildings are considered as devotional places, or rural oratories.

The present study, based on a careful survey census, analyzes the characteristics of these unusual architectural episodes. Through the identification of their structural peculiarities and reporting on their environmental relations it highlights so as these places of worship – although they are not showing a specific architectural character – make it possible to identify the signs of an old local building tradition that puts to its base the delicate link between architecture and landscape. An aspect, the latter, that all too often remains unexpected today, inevitably leading to environmental and social degradation.

ID 119

The role of graphical interfaces in the digital representation of the territory

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The computer graphics and the implementation of web-based information systems have highlighted a significant field of design in which the pair form/function appears exceeded by that of usability/interaction.

However in computerized maps the usability and the functionality must take into account the image, combining logic and aesthetics.

The present study deals with the digital territory representation related to the graphical users interfaces intended as communication surfaces: a cognitive and material space at the same time, in which usability and ergonomics are revalued in terms of visual enjoyment. They are studied in particular the graphical interfaces used in the digital representation of the territory on electronic devices.

By focusing on the relationship between man and machine, they are observed the different modes of communication and interaction, analyzing the various phases and the role of design in each of them in order to understand the logic, the methods and the techniques used in the digital representation of the landscape.

The paper then highlights the relationship between usability and aesthetics mediated through drawing.

ID 120

Investigations about the causes of structural damages of the convent of St. Bernardino in Amantea (Cs)

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In cities grown without a rational planning, anthropogenic (war, terrorism, arson, civil disorder) and natural hazards (hurricane, tsunamis, earthquake, landslide, volcanic eruption, flood, fire) pose a major threat to cultural, natural and landscape heritage, sometimes triggering irreversible damages or completely destroying entire areas. The Strategy for Risk Reduction at World Heritage Properties (UNESCO, 2007) highlighted the importance of: heritage protection and preservation, integration of heritage into risk and disaster reduction policies, production of guidance to integrate risk reduction into world heritage strategic planning and management.

To reduce disaster risks and mitigate their impacts, it is first necessary to identify risk factors that can affect cultural heritage. Vulnerability is a key determinant in the assessment of disaster risk, strictly related to the complementary concept of resilience. International action plans, such as Hyogo Framework (2005-2015), call for the adoption of systematic action to address disaster risks and build resilience of nations and communities.

Vulnerability and resilience are thus key concepts in the risk assessment of cultural heritage and for the formulation of intervention priorities and management strategies.

ID 121

Graphic design for social "disaster".

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Each dramatic event, even regardless of its nature and seriousness, may be perceived as a "disaster", personal or collective, resulting in further and substantial psycho-emotional "disasters". This double level of distress depends on the particular interaction that each individual, or group of individuals, establishes with the event. The disaster, therefore, not only appears attributable to the fact itself, but also to the cultural and emotional dimension of those who, in various ways, interface with that fact. It seems clear, then, that in the perception of emergencies, crisis, etc. communication is central because, as mediation process, can help those who are directly involved in problematic events, presenting them from a better point of view. With this purpose the visual communication, through an articulated repertoire of codes and channels, is pervasive and effective. From poster to the audiovisual product, from print to web, static and dynamic images (photographic and graphic images, such as, drawings, illustrations, infographics, etc.) represent facts into iconic signs and symbolic which, in a social solidarity perspective, convey urgent issues to a wide and culturally very diverse audience. The paper proposes some considerations on the main communications of the social disaster, aimed to shaping the perception and, ultimately, to guide the social behavior linked to it. The main objective is to identify prevalent visual languages of this specific field of communication in order to help shape new theoretical and cultural lines of the design discipline (drawing, graphics, audiovisual, etc.)

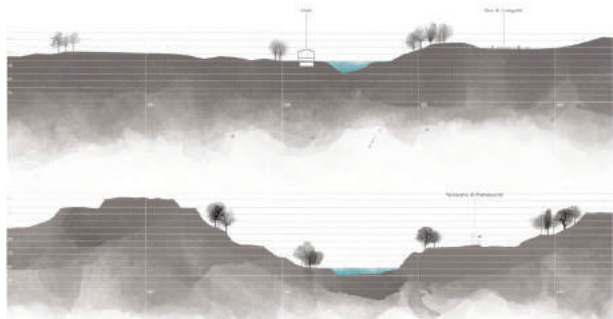
ID 122

ART and perceptual ARTifices

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ENEA, in collaboration with other partners, is carrying out the RoMA project (Resilience Enhancement of a Metropolitan Area), funded by MIUR under the "Smart Cities and Communities and Social Innovation" Programme. Part of the project activities is related to the safety of natural and archaeological heritage of Park of Veio (Rome). ENEA and the Department of Architecture of Roma Tre University have characterized land topography and some hydrogeological aspects of the area, linked to the possibility to predict possible floods. The main goal was evaluate the exposure to the hydrogeological risk of archaeological and historical heritage of Park of Veio. During the project activities, ENEA and Roma Tre University have realized a Risk Map, using the collected data organized in a Geographic Information System. This Risk Map will be part of a larger Decision Support System (DSS) that will allow to manage risk situations in the Area of Park of Veio, through an early warning flood system. The useful, interdisciplinary collaboration between ENEA and Roma Tre University in the fields of restoration and archaeological heritage, architecture, GIS, hydrogeology, physics, natural science and biology, as well as the study of the existing literature and the critical interpretation of new acquired data, has made possible to achieve also an innovative reading of the historical landscape of the "Ager Veientanus" and of its transformations over time.



ID 125

Digital reconstruction after disaster: what seems to be lost

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In this article, the case study we are presenting is the “Church of San Salvatore” in Campi di Norcia. The church was built between the ninth and fifteenth centuries, in the Romanesque and Gothic periods, and represents a very important example of Benedictine architecture in Valnerina. The church was completely destroyed by the recent earthquake that badly affected most of the cultural heritage. The only surviving information is connected to a “virtual tour” uploaded by a local photographer (Emanuele Persiani) on the Google Earth platform, which shows the church on January 2016. More information was also gathered from the pictures (non-spherical) taken by other photographers with reflex cameras. The spherical photos (that have been obtained by stitching 4 pictures taken with a reflex camera with an 8mm lens turned around a nodal point), processed in Agisoft Photoscan, became the support to model the whole building with a dense pointcloud. The digital model was validated using topographic measurements taken on site from the surviving masonry. This digital model was used as a reference to develop an HBIM. To realize the HBIM (in particular the vault’s parts) it was necessary to seek the invariant parameters and the geometric genesis that produced the artifact as actually appears.



ID 129

"Les Oubliés" to reactivate the City

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Nowadays our cities have to communicate with a very dense urban fabric and at the same time with a constellation of forgotten or underutilized spaces. Make them usable again it means emphasizing on their future management and wonder about the possibility that they may offer. Resilience is the solution: "les oubliés" are no longer just unlimited resource of the space to be filled, but first of all generic spaces between different "things".

This is what Brussels is leaving, which has experienced a great industrial development since the 1830s and around 1990 had to respond, quite fast, the huge demand for housing, offices, as a European capital. Already since the early 70's we are witnessing the destruction of buildings, demolition of neighborhoods, to promote large construction sites and the crossing of the railway line in the historical center. New movements of urban struggle, as the ARAU, which lead to the blocking of universities and leading to the creation of "Contreprojet", the subject of exhibitions, publications and urban debates.

In the new schedule they try to keep the inherent character of the different districts of the city, trying to revive the old abandoned factories, and the edges of the infrastructure. Along the Canal de Charleroi, once witness of the industrial growth of the city, they are transforming the old factories in archives of modern architecture, cutting-edge museums, training schools, fairs areas, theaters, cultural centers.



ID 131

Some mobile finds from rasola 1 of the castle of Montella

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The searches conducted in the Monte's castle of Montella (Avellino) between 1980 and 2008 have underlined a multilayered complex with phases of employment from the VI to the XX century. Against a large quantity of ceramic finds of high and late medieval age, the excavation conducted in rasola 1 returned a small, but significant number of artifacts that help to expand the product framework of material culture: it's worked stone objects, marble, glass and metal, used among other things for clothing, furniture, military life and commerce. The analysis of these findings helps to shed light on some aspects of daily life or the status of the inhabitants of the site, archaeological evidences is often difficult to record.

ID 132

Pylons and votive pillars. Cognitive analysis and design of degraded cultural heritage.

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In this brief note I want to illustrate some first considerations on a research, still in progress, which dealt with the analysis and design of kiosks and votive pillars. The geographical area is that of lower Piedmont, a hilly area located in the southwestern part of the province of Cuneo.

Throughout the Piedmont territory, there are a considerable number of small religious buildings - country and cemetery chapels, votive pillars - but apart from occasional studies related to individual buildings, until now they have not been made systematic scientific studies aimed at cataloging and analysis of these architectural heritage.

The methodological approach that has guided the research is started from the consideration that the cultural, architectural, landscaping and environment Italian heritage is among the most varied in the world and includes all tangible and intangible assets that are protected under the UNESCO guidelines. Regardless of the type of asset, it needs the right promotion that increments the cultural offer and promotes knowledge of heritage through communication and the transmission of knowledge. The study is thus born from the need to "safeguard", through the drawing tool, cataloging and cognitive analysis, these small architectures considered "minor", but which are living testimony of popular religiosity and elements that have changed and that characterize the urban and rural landscape.

ID 133

Timber framed with masonry infill: a historical anti-seismic device

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Seismic prevention in construction has been a major concern since the most ancient times. This work will study one of the oldest anti-seismic device observed in the history of constructive technology. It consists in the insertion of a three-dimensional timber frame embedded in stone masonry in order to bind together wall bays and contribute in resisting to seismic stress. Often, such a constructive principle was happily extended to the whole building creating new structural configurations.

This system spread between the XVI-XVIII centuries in the Mediterranean area, as Italy (casa baraccata), Portugal (Pombalina gaiola), Greece, etc., or in the middle-east Anatolia area (hımış), North Africa, etc. Similar configurations are observed in the North European countries.

The highly large number of examples shows how traditional constructive technologies, beyond the suboptimal rules of the art – by means of philological criterion and under detailed analysis of seismic vulnerability improvement – may allow preservation works that ensure the structural safety of historical constructions.

In such a perspective, this study aims to report the diffusion of the timber framed with masonry infill above and beyond the aspects more linked to anti-seismic technology, describing the most common constructive features, and developing guidelines for preservation/restoration of such a system, whereas present, designing criteria for consolidation and structural improvement, whereas necessary.

ID 134

The Great Mosque of Aleppo. A historical monument under siege

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A constant peculiarity of the most recent wars, and even more when it comes to ideological disputes, is the devastation of cultural heritage. The hatred that arises from these historical artefacts is greater when the architecture is considered a symbol of the culture of the party deemed hostile. The Great Mosque of Aleppo, is one of the cultural heritage sites declared as a World Heritage Site by UNESCO in 1986. In recent years, battles have developed more frequently in urban areas and from this mosque started the first riots of the Syrian revolution in March 25, 2011. The mosque has become a symbol of the tragic civil war in the middle of a fierce dispute. At the beginning of 2013 the historical library and its splendid wooden minbar, and the mihrab finely carved stone suffered irreparable harm when it was set on fire. On 24 April 2013 the minaret was reduced to pile of rubble after a heavily armed confrontation.

The Great Mosque was founded at the beginning of the 8th century and rebuilt and renovated several times over the centuries. The most important work was carried out under the leadership of sultan zengide Nur ad-Din in 1174 and, subsequently, by the mamluk sultan Qalawun during the 13th century. The minaret is a rather splendid Seljuk construction, built in 1094, during the reign of Alp Arslan. This essay traces the architectural history of the mosque and aims to bring to the attention of the Italian university community what is happening in one of the places considered by many the berceau de l'humanité.

ID 135

The Botanical Garden of Naples between war events, natural disasters and reckless urban planning proposals.

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Briefly presented, is the history of the Botanical Garden of Naples, from the years of its creation until today, emphasizing the most troubled times related to some careless planning proposals that were fortunately avoided, and that would upset the plant or to the dramatic consequences recorded inside as a result of natural disasters or war events. In particular, during the Second World War, the Garden was severely damaged due not only to the bombing, but also the dismemberment of its metal fittings used for the war industry, the destination of his land for cultivation of food crops to make up for lack of food, or for processing of its spaces and its buildings in the headquarters and barracks of the allied forces.

ID 136

Fictile Elements in Calabrian historical buildings. Results of a territorial survey

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Closed hollow fictile elements, known as “caruselli”, commonly used to obtain light and resistant roofs, can be found in historical buildings in Calabria.

A research activity was carried out to inventory, collect and catalogue various types of “caruselli” characterized by different manufacture, shape, availability of clay soils, assembly method and buildings where they were found. “Caruselli” were shaped by hand and differed in the quality of the clay and in the type of furnace where they were fired.

Specifically, the study presents the first results of a research activity aimed at systematizing information and data collected in the Calabrian context, as well as at classifying the fictile elements in relation to different attributes, such as materials, shapes, manufacturing techniques, assembly methods.



ID 138

City Gate Regeneration_Valletta_Malta

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In 2008, the Studio Renzo Piano Building Workshop began the study for the “Valletta City Gate” project, with which it was completely redesigned to access the historic center of Maltese capital.

The RPBW study project has succeeded in brilliantly establishing a dialogue that involves ancient buildings, new buildings, and entry into the city.

The new parliament, seen from afar, looks like an old stone quarry with glazed parts alluding to the engravings obtained by the mechanical means during the mining activity.

ID 139

Heritage Knowledge, Representation and Regeneration

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Knowledge is the basis of every representation of the material and immaterial values of reality and of documentary traces of man in his biological evolution in relation to the environmental context in which he lives.

In order for each local community to capitalize and protect the environmental environment in a broader way, it must consider material and immaterial values as magnitudes to be measured, discretized and drawn as a reprint because they are crossed by knowledge.

Technological advances thus revolutionized the representation and gave us the opportunity to measure and represent in an innovative way, both in the "measurement" phase of the objects, no longer understood as a simple description of the geometric aspects, and in the "Representation", with the possibility of simultaneous descriptions of multiple information.

The measure is the basis of knowledge and every representation of the material and immaterial values of reality and documentary traces of man in his biological evolution in relation to the environment in which he lives.

The representation, an instrument always homologous to the project, assimilates the past by laying the foundations for a modification that respects and retrieves the relationship between archetype and nature, sharing that biological, natural and evolutionary culture, able to support, against any transposition of predetermined patterns, A kind of regenerating function, as it is produced by the same complex identity of the places.



ID 140

Urban Revitalization: “Carceri Vecchie” Area, Santa Maria Capua Vetere

Francesco Pio ARCELLA

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The project area is located on the border of Santa Maria Capua Vetere and San Prisco, located on the Via Appia near the walls of the ancient Capua. The design objective of the intervention provides for the regeneration of a lot adjacent to one of the major assets of cultural interest in the town: “the old prison”, funerary monument of the first century d.C., defined as a prison for gladiators. The mausoleum looks like a cross-shaped burial chamber, a common type in Rome from the first century a.C. The design intent allows to give a precise aesthetic quality to the batch ensuring the protection and enhancement of the archaeological excavations in the site. The work ensures a total integration into the existing environment, helping to ensure the sense of belonging and local roots and evoking a strong technical and urban modernity.

ID 141

The Catania skyline: two absences from its urban landscape. The “destruction” of the Alessi Tower and of the Bellini Garden Library.

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Disastrous events, even if apparently different in nature, sometimes provoke similar effects on the urban landscape determining significant changes not only from the visual but also from the social point of view. In the context of the city two different typological realities, polysemic symbols in a perceptive dialogue, got lost, even in the historical collective memory. They are two soaring elements dating back to the second half of the XIX century, inserted into green areas: the Alessi Tower destroyed as a consequence of the building boom and a wooden kiosk used as a café-chantant, typical of the late XIX century European gardens, converted into a public library and destroyed by a fire at the beginning of the XXI century. The present contribution, based on all the possible historical documents, aims to make restitution through reconstructions for these charming “symbols” of Catania historical past. The purpose is to keep alive the memory so that the events told through drawing can transform the “absence” into remembrances.

ID 142

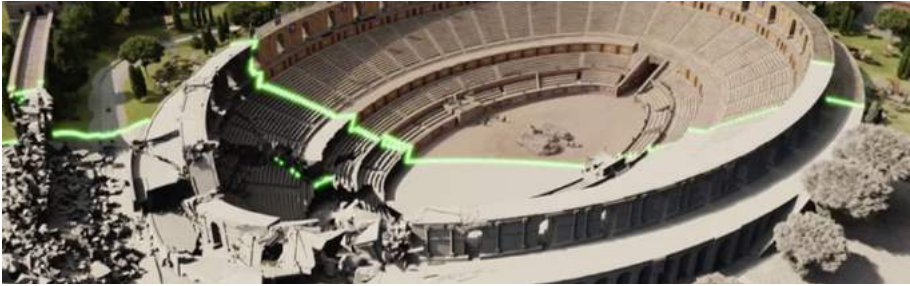
Manner to response to extreme rainfall events of some urban areas: the analysis of floods on 15th and 19th October 2015 in Samnium, Southern Italy.

Claudia CENNAMO

Concetta CUSANO

University of Campania
'Luigi Vanvitelli', Italy

This paper focuses on natural hazards, such as landslides and floods, and on consequent disasters that can suddenly hit extensive urban areas. The research aims to describe and detect the damages due to unprecedented rainfalls that occurred among 15th and 19th October 2015 and that have led to multiple calamitous events in the Municipalities of Benevento, in Southern Italy. It highlights the most affected locations and common phenomena in order to document the past and present situation of risk. This hydrologic event has resulted in simultaneous disasters in the different areas of the Samnium, namely overflowing of the Calore river, massive flooding, intense erosions, extensive landslides in the mountain areas and heavy damage to the constructions and infrastructures. Particularly, the research concerns the vulnerability of the existent crossing structures in the examined areas, e.g. some masonry bridges, that because of this event of flood have collapsed for a part. This brief overview wants to be a reflection on the issue of natural disasters related to the definition of risk scenarios and emergency management but especially to the extent of protecting the built heritage. The evaluation of territorial threats could be a fundamental source of knowledge to deal with future emergencies, by extending this approach all over the world, for planning and integrated development in specific geographic areas with similar constructive features and problematics.



ID 143

Hololens and Virtual architecture: 3D representation in archeology.

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HoloLens is a wearable holographic computer, but is more commonly referred to as an enhanced reality viewer because it is able to superimpose a virtual interface to the real environment with which it is possible to interact naturally. Of this device we still do not know all the details and potentials because it is still in development. Its potential is enormous and the development of software to create content inside it is in continuous development. The viewer is virtually a computer to wear on the head with transparent lenses (allow you to see the surrounding environment), advanced sensors and surround sound (spatial sound) that lets you know where the sound comes from. There are sensors in place to measure inertia, a light sensor, and four cameras that are responsible for environmental analysis. There is also a Z-Depth camera to recreate the surrounding environment and an HD camera with a 2-megapixel sensor for taking pictures and recording video. The voice commands management is entrusted to four microphones inserted inside the viewer. A possible development of HoloLens technology in the archaeological-archaeological field could be that of immersive representation of Pompeii destruction experiences. By quickly analyzing the movie filmmaker of the Pompeii film of 2014, it is possible to understand how much effort has been made to describe, with the help of 3D reconstruction technologies, the disastrous disturbances occurring in 79 dC. In recent years terrestrial and aerial LiDAR scanning have gained traction in the heritage, architectural, archaeological, and forensic fields, and have been leveraged for many purposes in Hollywood as well.

ID 144

Qualitative analysis and assessment of simplified mechanical models: case study of an historical masonry construction

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Rosamaria CODISPOTI

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Masonry buildings compose most part of existing historical heritage. They have been built using materials with poor mechanical properties coming from different historical periods. Despite the various earthquakes that are characterizing the European territory but above all Italy regions, the monumental buildings are still existing but with a high level of seismic vulnerability. Currently, buildings with monumental importance by specific technical standards are safeguarded; they protect, preserve and conserve over time their historical and cultural value. Indeed, the researchers and engineers with detailed and sophisticated methods investigate on the knowledge phase, security level evaluation against seismic actions and eventual strengthening project of historical cultural heritage respect to the common existing constructions. After a thorough knowledge of the structure, the safety assessment through the application of different analysis levels is carried out. This paper concerns the seismic evaluation of existing monumental buildings called "Santa Maria of Monte Persano" located in San Lucido (CS-Italy); in the first part of the work different evaluation levels, suggested by the technical standards, have been analyzed. Afterwards, a simplified mechanical method to an existing masonry building has been applied, highlighting the problems and the benefits encountered.

ID 145

Imaging Based Control of Roadbed Instability: The Case of San Valentino (PE).

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The incessant transformation of territories and landscapes is linked to diverse factors. In many cases they bring about rapid changes with an impact on the functioning of roads and sites. The causes are to be sought in naturally occurring endogenous geological processes and external processes such as erosion.

Implementing repairs or precautionary measures for clearly defined environmental transformations requires an analysis of current conditions, which may be understood through surveying. Surveying the environment means analysing a complex reality from different points of view. It requires a procedure that allows for an in-depth understanding of what is surveyed, using specific and aerial analyses to monitor and/or prevent eventual situations of immediate risk.

The text focuses on the use of rapid tools and methods that ensure optimum graphic and qualitative results able to define a base for successive analyses. Leaving aside the traditional method of laser scanning, a test was made of the use of digital photography using digital photogrammetry, also known as photo-modelling or imaging. A broad and in-depth surveying campaign used Photoscan software to study two road sections heavily damaged by a slope instability. The results proved highly interesting.

ID 147

Memory and post-war reconstruction in France: Louis Arretche and the revival of Saint-Malo

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For a long time neglected by scholars, the figure of Louis Arretche deserves more attention not only by virtue of his long-lasting career but also because, in its complexity, it is emblematic of the so-called Trente Glorieuses. A crucial period in France, especially for the approaches followed in the treatment of the historic city, marked by subsequent experiments carried out since the end of the World War II. In charge of the reconstruction of Saint-Malo, hardly hit by bombing in August 1944, the architect will strive to rebuild its historic soul. His project, founded on a meticulous knowledge process, will follow the principles of a sort of modern regionalism, albeit free from archaisms or nostalgic visions. Design criteria resulting from a compromise between the revival of the historical appearance and the formulation of a personal architectural language marked by both his awareness of reinforced concrete and the rejection of the formal rigidity of Modernism. Taking its cue from an analysis of the entire process of the so-called 'second reconstruction', this paper debates the case study of the Breton town, less known than others, such as Le Havre, but however an emblematic example of a reconstruction plan based on innovative traditionalism. An experience, which will later influence Arretche's activities for the safeguarding of the historical sectors of Paris, le Marais and Rouen, established under the provision of the 1962 Malraux law.

ID 148

Low cost survey techniques aimed to the Cultural Heritage conservation.

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Thanks to SfM (Image Based Modeling) survey techniques, is possible to realize 3D models of every object, in a very short time and with limited economical and training resources, today. These semi-automated SfM software allow users to simply upload photos and follow a mediated workflow, without any complex inner workings of SfM and this can be especially advantageous to users in non-technical fields or to those with limited resources. Every year there is an international Event, #digitalinvasion, that involves the Italian museums and that reckons on to allow to take pictures and video to the whole museum collections. This event is present in Palermo since 2014 and the Engineering first year classes were been twice involved in 2015 and 2016: it was possible to experiment the effect of a dissemination of these techniques in a sample of young and non-technical people. In these two occasions, the engineering alumni had carried out the 3D models of more than 120 pieces (with different dimensions and difficulties) of the Salinas Archeological Museum's collection. The same experience was been conducted in Catania with the third year engineering classes under the supervision of the Professor Cettina Santagati. In this paper will be reported the very impressive results of twice experiences and will be designed the idea project for a different vision and "use" of the museum visitors. The goal is to demonstrate that the museum visitors can be transformed in a fundamental resource aimed at creation of the 3D archives and conservation of the heritage museum collection.

ID 149

Environmental and Technological Design: a didactical experience towards a sustainable design approach.

Giacomo CHIESA

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This paper is related to an experience carried out in the Environmental and Technological Design course of the Bachelor Degree Programme in Architecture at the Politecnico di Torino. A methodology for defining and assessing bioclimatic and passive energy systems applied to the whole building design process, from building programming to design development, is presented. Examples of exercises carried out by students are also described. This method can be applied to the professional practice of bioclimatic architecture designers dealing with both new building construction and renovation of existing buildings, even the ones with historical values. The system boundary is related to the building envelope, both transparent and opaque. A multi-variables approach is applied to calculate and evaluate the mutual interferences between different aspects of building design. In particular, these variables are: solar access and control by shading according to seasons and climate; daylighting control system to reduce artificial lighting; wind access and controlled natural ventilation for space cooling and indoor air quality. The possibility to act on façade transparent elements, considering all the above main aspects, results to be essential for learning and understanding the influence of environmental and technological choices on the building system. The use of different tools and calculation models is described with special attention to controlled natural ventilation systems.



ID 150

Environmental Water Supply System (EWSS) for Disaster Mitigation in Seismic Fire - Case Project in Kiyomizu World Cultural Heritage Zone.

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University / Institute of Di-
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Cultural Heritage, Kyoto,
Japan

Development of “Environmental Water Supply System (EWSS) for Disaster Mitigation” is a project that is aimed at fostering the climate and reviving natural water resources in an easy to use manner. In addition, this project also aims at preserving the wooden culture from seismic fires in spite of damage in modern firefighting system, and realizing a beautiful and safer city environment with abundant water. It is also the duty of present generation to revive them from the perspective of environment and disaster prevention and pass on to the future generations. The former chapters deal with a part of the advanced cases pertaining to Disaster Prevention Water Supply System using natural water resources specific to the region along with the improvement/development projects. Subsequently, we shall try out the recommendations of concrete plans for the case project regions employing these concepts. As for the target area, Kiyomizu area (inclusive of world heritage listed sites in the vicinity of Kiyomizu temple) was selected.

When it comes to the implementation of maintenance project, there were many issues such as securing the budget, setting the operating body and consensus building with the residents, and development of the project is not easy. We will introduce policies towards subsequent additional maintenance by consolidating the requirements in the process of realizing the reference cases.

ID 151

The tendencies of monumental character intervention: the Brazilian experience (1980-2010)

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The article “The tendencies of monumental character intervention: the Brazilian experience (1980-2010)”, has guided us to reflect on the recent dialogue between old and new, permanence and innovation, preservation and change: aspects that are part of the contemporary architectural production scenery, where, at increasingly fast pace, old buildings have become part of a new history of the city.

Known as – restoration, rehabilitation, readjustment, revitalization, recycling – the actions of interventions always operate in relation with time: the life-time of the monument, the time during which it was submitted to degradation, the successive layers of time that were added to it along its transformations and the time left as a living monument.

In order to clarify these and other issues on the matter, it is important to investigate the theoretical assumptions and criteria related to the projects adopted in the interventions on the buildings of historical and artistic value – which are, from my point of view, the core of the matter – starting from the Italian art of restoring, bearing in mind the principles of the Venice Charter for a better understanding of the characteristics and the procedures adopted in the interventions of historical preexistence in Brazil in the last decades.

Eight tendencies of mostly recurrent interventions (Autonomy, Differentiation, Reinterpretation, Revival (Ripristino), Appropriation, Completion, Preservation and Reintegration) among a group of analyzed works were established: groups with similar characteristics, not totally strict and closed in order to enable the understanding of the works and characterize the range of interventions in Brazil related to restoring.

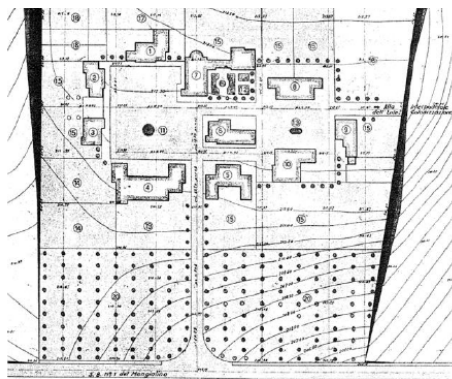
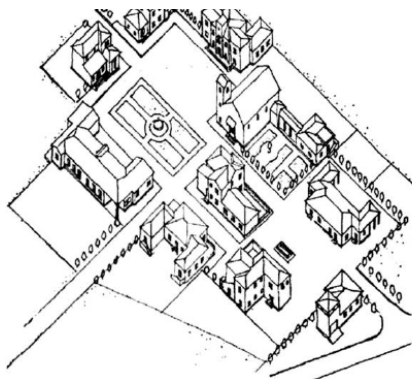
ID 152

The anthropized hypogean structures of Molise, a case study: the church of Sant'Antonio Abate at Pietracupa.

Piero BARLOZZINI

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The natural limestone of the Molise's hills together with tectonic and erosive activity have favoured the creation of areas that are difficult to access, which in time became the sites of fortified settlements but also hermitages. Today, the function of these spaces has changed and they are now the subject of various types of research. Compared to other Italian regions, in Molise these sites have only recently come to the fore in academic discussion, immediately followed by the realisation of the need to identify, catalogue and record them. Therefore, research has begun and the results will be entered in a geographic information system (GIS), which in addition to georeferencing the sites will also facilitate a complete investigation of the phenomena of anthropized rock-cut structures, research that will also be of use with regard to tourism. The first results show some differences in the function of these underground structures. Residential settlements can be recognised by the presence of wells, cisterns, hearths, and steps, while cult sites are identified by altars, aedicules and sacred images. Naturally, the co-existence of elements from both types indicates an alternation in function, as is the case at Pietracupa. Investigations undertaken here have identified about twelve sites used for cult and/or residential purposes. The uncertainty of the number or function is due to the fact that the study is ongoing and that it is not always possible to identify evidence that shows the structures were used as dwellings. However, in some cavities, the research has been successful and now their location, history, and spatial configuration are known, as is the case of the church of Sant'Antonio Abate.



ID 154

A new type of agrarian life: rural heritage safeguarding for social and cultural development

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In latest decades, there has been a growing interest towards the preservation of rural landscapes. Characterized by tangible and intangible elements, they result from the interrelation between man and nature and for this reason, own important cultural value. However, this heritage is fragile as exposed to weathering and decay phenomena that can blur or erase its distinctive features; it is also unstable due to both human actions and threats related to the acceleration of economic and social processes. In a period characterized by a global financial crisis, rural landscapes urgently ask for solutions to the environmental vulnerabilities caused by the abandonment of land and traditional crops. In this framework, the villages erected following the Fascist assault on the latifundia in Sicily, today unused and in a bad state of repair, deserve special attention. Such goods could benefit from the specific and accurate knowledge, conservation and revitalization activities. Focusing on the case study of Borgo Lupo in Mineo, Catania, this paper aims to highlight how the recovery and adaptive reuse of such sites could represent an opportunity for the invigoration of an area now scarcely populated, but at a very high agricultural vocation, so improving environmental and social justice, cooperative behavior, solidarity, and the general welfare.

ID 155

The quality of living: The requalification processes of the public housing in brindisi

Calogero MONTALBANO

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University of Bari, Italy

This paper aims to describe, starting from the preliminary analysis of the urban and housing context, a methodological approach to the requalification and social rehabilitation of nineteenth century residential districts with a strong historical value. This operates simultaneously on the retrieval of the complex relationships (functional and social) on the town scale and on the improvement of the constructive-technological, typological-functional and energetic-environmental parameters on the building scale.

The case study is represented by the residential INA-casa district located in Viale degli Abruzzi in Brindisi. The district, which represents an important stage of the history of social housing in Brindisi. It has been constructed in the 50s, during the second seven-year of Italy's INA-Casa period, by the architect Gaetano Minucci and it reuses almost blindly the planning criteria indicated in the national guidelines provided by the institute INA-Casa. The research proposed a performance enhancement of the districts in energetic terms and typological-functional but also paved the way for a functional rehabilitation of the urban district aimed at the achievement of a higher quality of life for its inhabitants.

ID 156

The restoration of the outer wall of the Colosseum in the nineteenth century: the intention of Giuseppe Valadier regarding distinctions between old and new architectural materials.

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This study discussed the characteristics and context of the architectural restoration method, distinctions between old and new architectural materials in Giuseppe Valadier's interventions on ancient monuments in Rome in the first half of the nineteenth century. The western outer wall of the Colosseum was taken as an example and compared with the Arch of Titus, and this study showed that Valadier prioritized safeguarding ancient structures in terms of their physical strength and design. He distinguished old and new parts in his restorations by means of the use of different architectural materials, contracting colors, restoration records, and various degrees of sculpturing.

ID 157

District heating systems using seasonal thermal energy storages: a comprehensive literature review.

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District heating systems represent a valid alternative for cities to move towards resource-efficient and low-carbon pathways. In particular, solar district heating is a promising option, where the drawback related to the mismatch between summer supply and winter demand could be tackled by using a large seasonal thermal energy storage. This kind of tank allows to store thermal energy over weeks and months, with it being particularly important for communities where solar energy availability is high during the summer in contrast to a large demand during the winter.

This study reports a comprehensive review on district heating systems using seasonal thermal storages across a broad set of case studies reported in current literature, classifying them in terms of operating schemes, location, typology of seasonal thermal energy storage, characteristics of end-users, technologies for centralised and local energy generation as well as components size. An awareness and understanding of the many factors discussed in this paper are essential in order to improve the reliability of district heating or cooling installations.

ID 159

Refurbishing solutions for a museum: the integration between new multimedia exhibition technologies and artificial lighting systems

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The historical building "Museum of the Compass and the Maritime Duchy of Amalfi" (Italy) was used as a case study to evaluate the efficiency of a new way to exhibit historical artefacts through modern multimedia technologies, focusing on the visual environment.

Studies and analyses have been carried out with the goals of improving the fruition of the historical site as well as integrating the need to preserve a historical building along with the need of a new final destination as museum. The research starts with new design and refurbishing solutions of the building so as to enhance its usability as well as guarantee a better balance between the preservation of the historical building and the exhibit needs.

A specific lighting system was designed taking into account the different preservation needs of the historical building as well as the enhancement of the different museum spaces.

Different types of luminaires were used for each lighting need: (1) identification of the expositive itinerary; (2) requirements for general lighting and (3) highlighting of historical artefacts. Particular attention was given to the quality of the light as well as the visual comfort of the visitors.

Finally, in order to define the best design solution, the simulation software DIALux was used to compare the different luminaires types and arrangements.

ID 160

Integrated Survey and Three-Dimensional Modeling for the Historical-Critical Study of Modern Architecture. The Colonia "IX Maggio" (1934-1937) by Ettore Rossi.

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The "Colonia per i figli delle Genti del mare 'IX maggio'" is a summer-camp building realized in L'Aquila in 1937, designed by Ettore Rossi (1894 – 1968). It is related to the experimentation on "social" typologies made in these years on national scale by the fascist social policies. Pagano, in 1937, dedicated to the building an article in "Casabella".

The "Colonia" offers a scheme and a settlement typical of hospital buildings, such as the "Ospedale Civile" in Bolzano (1934) of the same author. Between the end of the Sixties and the beginning of the Seventies of the XX century, the building was modified to become university center. Today it still presents the serious damages caused by the earthquake of 2009.

The integrated surveying made by laser-scanning allows the realization of a restitutive complex model of the current state, and of a reconstructive model of the building as it was at its inauguration. According to the volumetric and distributive articulation, the models favor the study and understanding of typological and spatial characteristics of the building. The paper focuses on the use of complex 3-D models for the historical-architectural and typological analysis as well as for the restoration project.

ID 163

ASTRUM-DIS. School-work alternation, educational action on the territory.

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The study is a socio-anthropological analysis of school-work activity conducted by the Laboratory "LANDesign" ® (Prof. Sabina Martusciello, Prof. Maria Dolores Morelli), Department of Architecture and Industrial Design, University of Campania with Ministry of Education, University and Research of the Campania Region.

The object of the qualitative-quantitative analysis are some second degree secondary schools of Campania selected as examples-sample monitored over a period of ten months.

The path of school-work alternation done with lectures, visits to archaeological sites, monuments and laboratory activities aimed at knowledge of the area as a best practice to act. The socio-anthropological analysis objective is to develop the implications of multidisciplinary achievements: educational-behavioral, cultural, social, economic, and evaluate the degree of the change of the experienced process through the knowledge, skills and metacognitive skills and extracognitive matured at the end of the path.

The school-work pathways capture the complexity and specificity of educational processes by understanding the cultural and educational institutions and local resources that surround us.

Culture, through the methodology of school and work alternance, becomes reparative cell of the local disaster.

ID 164

Design in the Edge. Strategies for enhancing self-innovation aptitude of fringes.

Jurji FILIERI

Elisabetta BENELLI

Laura GIRALDI

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Firenze, Italy

In the actual scenario, which is deeply affected by information technologies, and characterized by the continuous growth of relational connections, the society is more and more like a wide global rhizome, wherein users are involved, together with objects, services and non-users. This audience network consists of various cultural sub-nets, which in certain ways are very similar to tribes. Since each one of them is always changing in terms of size and identity, design must constantly keep in touch with them, and learn through their relational ties in order to obtain effectiveness and relevance. Including insights from "Actor-Network-Theory" and relational assessments, the paper outlines some first research hypothesis, about the transfer of design process in the edge of the social, as a new custom design strategy. On one hand the peripheral sections become effective clusters for scientific survey, local production and diffuse design practices. "If the market is more and more searching for stories rather than products, it is necessary quickly gather changes in the culture. Since we can see only what we know, we belong in the [peripheral] culture" (Zurlo, 2012). On the other hand adopting reticular models in design means arousing interest in relationships. Fringes of the network model demonstrates an amazing adaptive capability towards markets, so we need to pay more and more attention to their relational environment.

ID 165

Avoid disaster: Preventive Archaeology. The work of Inrap (France), a case study in Guadeloupe: the sugar plantation "Beausoleil".

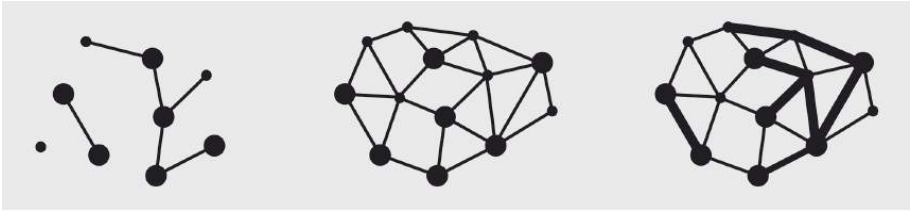
Maria Paola BULLA

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'Luigi Vanvitelli', Italy

The purpose of the European La Valletta Convention (La Valletta, 16.1.1992) is "to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study" and considers the prevention one of its top priorities, in particular by ensuring the participation of archaeologists in the planning of spatial and infrastructural development. The task of Preventive Archaeology is to avoid the destruction of archaeological heritage in advance to construction projects, that involve undertake excavation, in an effort to preserve the archaeological record.

In Europe, in the context of preventive archaeology, the French Republic played a pioneering role with the creation in 2002 of the INRAP, "Institut national de recherches archéologiques préventives" (National Institute for Preventive Archaeological Research), a public research institution under the supervision of the Ministry of Culture and Communication and the Ministry of Research. The institute not only works to detect and to preserve archaeological heritage affected by development and infrastructural works but also contributes to the diffusion of the research results in the scientific community and to the exploitation of archaeology.

The aim of the work is to expose the application of preventive archaeology in the zone of "Beausoleil" (Sainte-Claude, Basse-Terre, Guadeloupe). The origin of the archaeological intervention, led from April till June 2015 under the direction of Emmanuel Moizan (Inrap), was the construction of social housing units in the area. The excavation has revealed the rests of a rich residential annexed to a sugar plantation called "Beausoleil" (18th-19thcenturies) and so avoided the loss of archaeological heritage.



ID 167

Disaster and Built Heritage in Serbia

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Serbia has valuable and diverse cultural heritage which was substantially neglected during decades of political turmoil. Therefore, in recent years “management” became a buzz word of heritage preservation, during an attempt to enable that built heritage serves to the society according to its full potential. An overview of current state reveals range of natural and man-made disasters which endanger built heritage on the territory of nowadays Serbia.

In most cases, damage or loss can be prevented by well planned and prepared actions. The planning requires integration of heritage management plans into legal framework, not only for internationally significant World heritage sites, but for all heritage sites which are relevant for communities at national or local levels. The research in this paper particularly focuses on the disasters which could be prevented.

ID 168

(R)4SMEs Resilience essentials for Small and Medium-sized Enterprises SMEs

Elisabetta BENELLI

Laura GIRALDI

Jurji FILIERI

Francesca FILIPPI

University of Florence, Italy

Economic recessions have created challenges for SMEs and contributed to disruptions requiring them to be resilient. The present study started with a mapping of SMEs (in fashion and design sectors) in Tuscany and then extended the research to the national context in order to strengthen the link between industry and academia. Tuscany is a land of excellence, knowledge and ancient craft that are passed on from generation to generation: processing of Casentino wool or Tavarnelle lace...are just some concrete examples of this. Actually there are a lot of products that contributed over the centuries to make Tuscany a symbol of tradition and the, so called, Made in Italy has become an intangible but of unquestionable importance value. General aim of this project is to demonstrate that an increasingly strong "net" of skills from different sectors orients innovative design processes even within fashion design and, at the same time, strengthen the local identities and protect cultural diversity, in order to transmit to future generations the tangible and intangible heritage tied to our traditions. The research therefore intends to create contact areas among the traditional knowledge, artisan competence and research activities conducted in universities in order to enhance the tradition of excellence and read them in a contemporary way. Everyone agree on the point, that globalization cannot be turned back but the "new media of globalization" can be used to preserve our tradition.

ID 170

Vesuvius and Campi Flegrei: volcanic hazard and Civil Defense

Benedetto DE VIVO

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The Italian Civil Defense (DPC) is the government agency responsible for assessing, defining, and mitigating the risk associated with volcanic hazards in Italy. Vesuvius volcano, due to the close proximity of a densely populated area and the city of Naples, presents a most serious hazard in terms of human and property risk. The volcano and the area around it have been divided by DPC into 3 zones: the Red Zone, the area with the highest hazard and volcanic risk for pyroclastic flows; the Yellow Zone, the area affected by fall-out deposits; and the Blue Zone, the area prone to mud flow and lahar deposition. The Red Zone includes 24 or 27 municipalities (town territories) within which live about 600,000 people (in 40,000 buildings). Surprisingly, up to few years ago, the Red Zone was defined using the jagged limits of the municipality administrative borders, rather than any scientific criteria, and based on this, an important risk-management measure adopted by the Regional Government was to forbid, correctly, any further building in the Red Zone. But paradoxically, the largest Civil Hospital of southern Italy (the Ospedale del Mare - the Hospital of the Sea) is built, at 7.5 km from the crater, i.e., entirely within the Red Zone, that is, in the zone at maximum risk to be hit by highly destructive pyroclastic flows (90% of the past pyroclastic flows in the 25,000 years of Mt. Somma-Vesuvius history occurred within the Red Zone). The main weakness of Vesuvius risk management is the lack of full disclosure to the public of the severe difficulties of eruption prediction for such a complex volcano. Contradictory messages must not be given to people living at risk on the volcano slopes. How can the DPC convince the people to relocate from the risk zone, if the largest public Hospital in southern Italy is being built in the same risk zone? Only recently, the Civil Protection Department has provided a plan that identifies the Red Zone for the Campi Flegrei. It is based on the concept of a preventive evacuation from the territories potentially exposed to the invasion of pyroclastic flows. The plan proposed displays numerous incoherences which need to be re-evaluated based on the knowledge of past and recent CF volcanological history.

ID 171

The establishment of the New city of Guatemala after Santa Marta's Earthquake

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In the period between the fifteenth and eighteenth century, the process of transformation of the social reality arising from the development of the market between the Mediterranean and the Atlantic and the concession of the management of ecclesiastical issues by the Church to the Spanish Crown indicated the beginning of an era in which we can observe a series of principles and planner characters in the urban field.

From the sixteenth century, after the discovery and conquest of the territories of Latin America, the Kingdom tried to carry out a process of colonization with the reorganization of all the laws produced until then, working out the *Nuevas de Ordenanzas Descubrimientos, Población y de las Indias*.

The experience was projected in time as the theoretical synthesis for an organizational approach, creating a model capable of giving formal and structural uniformity to the territorial dominion. Since the eighteenth century an expansive development of the ancient centers took place and derived from changes in economic and social conditions of the population in the Spanish colonies, by population growth and the continuous migrations.

Among Latin countries, Guatemala was definitely the most receptive of the new neoclassical inspiration, which found opportunity of application in the founding of the New Town after the tragic event of the earthquake of Santa Marta in the July 29, 1773 with the participation of Spanish and Italian architects.

ID 172

The disasters of the Great War in Ypres: memory and collective identity.

Maria Chiara RAPALO

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Located at the western edge of the Flanders region, Ypres is one of “the historical post-disaster and post-war examples”, where, after the destruction of its historic fabric during the first World War, the vox populi did not resign to the irreversible loss of its heritage, that, almost instinctively, was rebuilt à l'identique.

In the '20s and '30s, the city was faithfully rebuilt in medieval style and today the complex which consists of the bell tower and the Lakenhalle (Cloth Hall) has been ranked among the sites of the World Heritage List since 1999. A century after the tragedy of the war, the town presents, in all its elements, a close link with the past and especially with the memory of the war, which now has become a unifying element, recognized in the population identity.

As part of the Commémoration du Grand Centenaire of the World War I - which has had the aim to rediscover and enhance the Great War heritage -, several meetings, activities and initiatives have been organized and some interventions that aimed at enhancing the testimonies of buildings and sites of war have been valued. Some of them – the restoration of Kazematten and the ancient Poudrière and interventions to improve the perception of the Bluff war landscape – can be considered interesting for the practice of landscape architectural conservation.

The aim of this paper is to understand how these interventions, considered as interesting practices for the conservation of tangible and intangible heritage, have strengthened the collective identity and have been able to grasp the sense of identity of the war – that now is characteristic of the city – by permitting to the instances of its memory to be turned into places regenerators projects.

ID 173

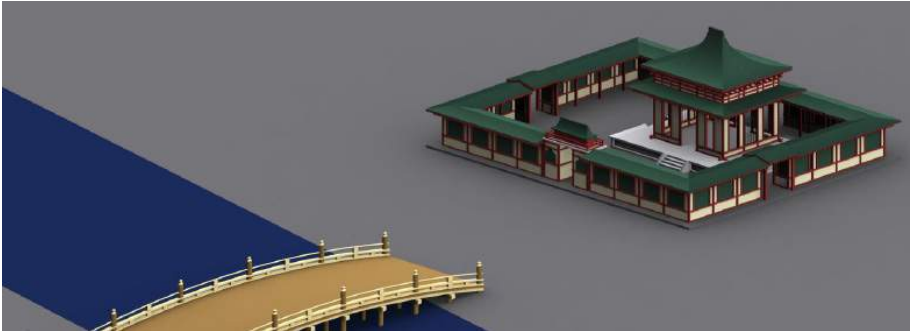
About Ruining. A Representative Interpretation

Daniele Giovanni PAPI

**Franco
FORZANI BORRONI**

Politecnico di Milano, Italy

The ravages of recent archaeological sites in Syria and before in Afghanistan at the hands of different Islamist groups re-open the debate on the value of the ruins and the meaning that their conservation can come to assume from time to time. Even in the West, in the eighteenth-century, within the Enlightenment cultural tradition, as is known, it took place a current of thought that explicit the opportunity, if not the need, to get rid of the signs of the past to foster progress. The vital nerve centers of this debate become active from the eighteenth century on, a threshold that marks the distinction between the historical and the esthetical dimensions of ruins, and makes it the subject of a reflection with a gesture that is, at the same time, ownership and artificialisation. History becomes collective starting from the moment when ruins are integrated in a process of becoming, in the sense of the new destiny that the nation has chosen to adopt, and the “active pleasure” (historic) of creating ruins contrasts with the “passive leisure” (aesthetic) of contemplating ruins. The matter is then to understand to what extent this broad cultural approach - that is institutionalized since the 30s of the '700 until the post-revolutionary fury of Volney in his work of 1791 - enhances or suppresses the meaning attributed to the image related to the vestiges of the past or even how the deep empathy aroused by their representation comes up again in alternative figurations.



ID 174

The reconstruction of Heiankyo (Kyoto): the image of a capital city between the clouds

Isabella FRISO

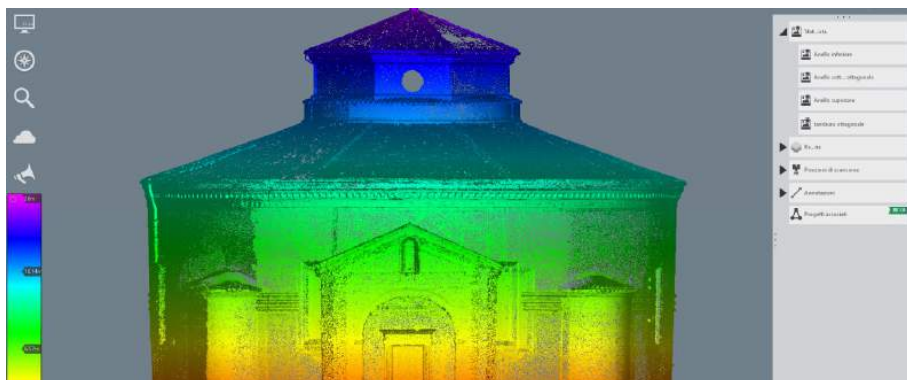
Cosimo MONTELEONE

Claudio PATANÈ

University of Padova, Italy

Kyoto has now 1.5 million of citizens and appears like a compact set of modern buildings among which temples, pagodas and zen gardens can be seen as traces from the past. The city was capital of Japan and imperial residence for more than a millennium (794-1868), as long as it held this important political role its name was Heiankyo. Over the centuries Heiankyo faced fires, earthquakes, civil wars that devastated it several times, but the city was always reconstructed as far as possible on the original model; only recently its appearance has been lost because of a wicked ideal: Westernization.

Luckily, the original image of Heiankyo is not lost yet: the eastern tradition to paint urban scenes or landscapes on folding screens offers the opportunity to reconstruct – at least virtually – its original appearance. The screens that represent Heiankyo, using pseudo-cavalier projection views, are usually named *rakuchu rakugai zu* and date back from the sixteenth to the eighteenth century. They show the old capital “between the clouds”, highlighting the balance between natural landscape and urban space, a typical feature of the Far Eastern culture. This paper shows that it is possible to reconstruct with new technologies the old *imago urbis* of Heiankyo, speculating on the artistic production of the *rakuchu rakugai zu*, trying to represent the forgotten traces of the old city that the process of Westernization tried to destroy completely.



ID 175

The Sanctuary of Santa Maria delle Grazie at Fornò: a FEM approach to seismic structural analysis

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Nicola SANTOPUOLI

University of Roma, Italy

The Sanctuary of Santa Maria delle Grazie at Fornò, located in the countryside near Forlì, was constructed between 1450 and the early years of the sixteenth century. The Sanctuary externally consists of a circular masonry structure 15 m high and 33 m in diameter, with four semi-circular niches protruding to the outside; inside, a similar circular structure 20 meters high delimits a central area, covered by an octagonal dome. The space between the two circular structures is covered with a wooden roof resting on thirty-six main wooden beams. The building has been subject to various interventions due both by static requirements (i.e. damage caused by several historical earthquakes), both for changes related to epoch's style (the four semicircular niches realized in 1686). Finally, the events of World War II, with the demolition of the bell tower and part of the adjacent monastery, have brought the building back to the clear original shape. Recently an entire laser survey was carried out, providing comprehensive measurements for reconstructing the Sanctuary's shape and overall size. After the laser survey, several structural analyses are executed. Lately it was possible to study the effect of the possible consolidation works under the strain, even seismic, expected by the new national rules particularly in the light of the guidelines (2011) for the "Assessment and reduction of seismic risk of cultural heritage with regard to the technical standards for construction in DM 14/01/2008".

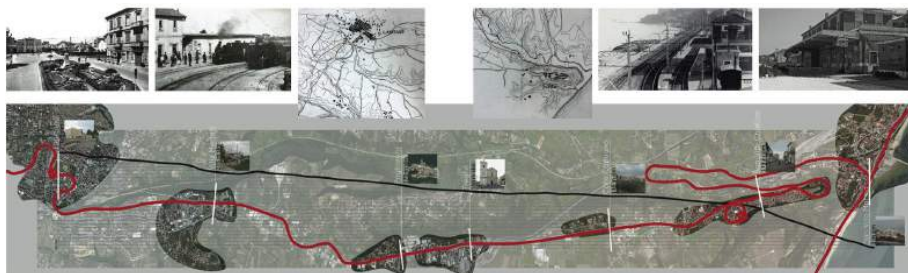
ID 176

From Chaos to Order - Dürer Imaginary in Architectural Proposal for the Restoration of a Renaissance Palace in Lisbon.

Jorge CRUZ PINTO

University of Lisbon
Portugal

The theme of disaster, particularly natural disasters, refers to a relentless force of the elements -Water, Fire, Earth, Air - in a form of tsunamis, fires, earthquakes... The four elements that ancient philosophers and alchemists believed to be in the formation of the cosmos and the matter were rediscovered by the poetic phenomenology of Bachelard and served as a motto, along with the famous Dürer's "Melancholy" engraving, for a reflection on the catastrophes and importance of the chaos in creative artistic processes. According to the Jungian correspondence between the Nigredo phase in the Alchemical process of the Opus Magnum realization and the individuation process, we established analogies between cosmogenic creation and artistic creativity including urban architectural processes. We start from a brief contextualization of the historical memory of the great earthquake, fire and marmot of Lisbon in 1755, and the reconstruction of the Baixa, Lisbon down town, promoted by the Marquis of Pombal. This historical image serves as a framework for our architectural restoration proposal and artistic intervention in the Almada Carvalhais Renaissance Palace, a building classified as a national monument, in the vicinity of Lisbon's Baixa Pombalina. The Palace was object of several renewals in 18th century after the earthquake, but the successive inappropriate uses and advanced degradation state was another form of heritage disaster, which our architectural proposal tries to reverse.



ID 179

Retracing the Sangritana Railway starting from Filippo Sargiacomo's Drawing.

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The goal of the study is the representation of some values of the Abruzzo landscape through the integrated use of Drawing and Photography. The study deals with some of the architectural and environmental sites crossed by the ancient route of the Sangritana Railway now partly disused. The railway system ran through an important piece of land overlooking the Adriatic coast. It reveals remarkable items of interest and, for its particular planimetric configuration, offers a unique view into fruition of the 'qualities' of a Mediterranean landscape. A reflection on unusual aspects of an Adriatic territorial district in order to detect the uniqueness, emphasizing dissonances, juxtaposing chromatic notes. Sort of visions, not exhaustive, of a notebook of a passing traveler. Starting from the reading of the original archive drawings we tried to retrace valences and evolution of a design concept that has conditioned the evolution of these territories, recomposing a story in pictures, sort of a story-telling, documenting major aspects connoting this rare landscape.

ID 180

ACTIVEMODESIGN. Actions and products of creative resilient

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ACTIVEMODEsign is a creative cosmetic activity directed to the Mediterranean territory pursuing the themes of the encyclical letter "LAUDATO SI'" of the Holy Father Francis on care for our common home: to implement a new "human ecology" because the world is all intimately connected, by proposing a new lifestyle which perceives economy and progress differently through "the culture of waste".

ACTIVEMODEsign is the design of accessories, clothing, boxes, aids and decors of the cosmo-ethics: it produce healthy products and actions related to people and environmental products, "reparative and reinforcing stem cells of the evolutionary processes." Actions and products which come from "culture" and "knowledge" of the territory, its needs, its potential, optimized as a subject of the project which simultaneously satisfies the requirements of the territory.



ID 181

Restitution of Barcelona at the end of the third century. Models and diffusion of the Colonia Iulia Augusta Faventia Paterna Barcino.

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Barcino 3D is a project that seeks to unify archaeological knowledge, allowing the formal definition of Barcelona at the end of the third century, designed for the dissemination of archaeological heritage to all types of public, through a set of interactive applications for web, smartphones and tablets (IOS and Android).

This article defines the methodologies used for the virtual construction of Barcino and its territory, based on a procedural construction and Geographic Information Systems (GIS), allowing to propose different approaches of the city. In this process, archaeological information is organized based on rule-base modeling and database management, with multiple levels of information, at different scales: territorial, urban and architectural. These models are optimized to the different platforms, to transmit knowledge and direct visualization between the present Barcelona and the colony of Barcino at the end of the III century.

ID 183

An approach to analyze the sustainability of architectural and urban design.

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Historic heritage centers, very often, do have to deal with natural disasters - earthquakes, floods, fires- and other produced adversities, resulting from social conflicts, such as vandalism and terrorism that contemporary society is facing. The conditioning characteristics of historic centers, tight urban layouts, architectural barriers, degraded buildings, lack of resources and evacuation plans, increase the vulnerability of these centers for natural disasters and intentional violence. Urban rehabilitation or conservation plans have to integrate security plans. These plans in first instance concern the protection of the well being of the direct and indirect participants and the preservation of the built heritage and on a second thought they become also of interest for the study of sustainability regarding durability, economy and environmental friendliness. This study makes an approach to develop a method for the analysis of sustainability of urban and architectural design plans. It is based on a research about the sustainability of masonry of bricks and stones, which constitutes the majority of built heritage. The achieved results are taken to lift the research to a further level of analyzing the architectural design in its horizontal dimension and its urban configuration. It marks a starting point with formulated indicators and a methodology of survey, which enables to improve and develop new indicators and surveying methods adjusted to specific projects that reveals sustainability data of a project from its early stages.



ID 184

Designing of Wayfinding as facilitator of evacuation in case of emergency: application to large museums

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In case of emergency, a poor building layout or inappropriate signage system in relation to the environment or to the knowledge by people can hinder the orienting ability. These aspects become crucial for a conscious design/retrofit for complex buildings as large museums, because they could become hardly usable by people, especially in overcrowding situations. Thoughts prior to design of works for safety in large museums must also take into account of the individual abilities in identifying the exit routes to safe place/rooms and that even occasional visitors shall easily find them usable. In such a context with a large presence of visitors in relation to particular cultural events, we also need to assess lack of alternative measures (design/construction, systems or management) besides the signage system, actually only based on visual signs. In fact, this is usually the only available guidance tool, and it is only part of the overall safety system, without providing signage modes using more sensorial abilities. Therefore, this paper pays attention to identifying guidelines - for actions aiming to safety and to facilitation of evacuation in case of emergency in large museums - included in the following specific areas: visual access to information, design/construction perception level, directional signage system, floorplans layout.

ID 185

Phenomenology of the Mudéjar Style and its reformulation in Hispanic America

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MARINO**

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The Mudejar style, introduced to the New Continent from Spain initially by the Conquistadores and later through other transmission channels, can now be found in all Latin America. The Spanish culture is an amalgam of the multiple influences it received through the centuries; the most important of them is the Islamic, spanning from the arrival of the Moors in the 7th century to their expulsion in the 15th century. After the expulsion, the mudéjares were allowed to remain and they kept the constructive and decorative heritage alive, incorporating novel elements into new, deeply structured architectural typologies that expressed a coherent aesthetic, artistic and architectonic vision. The resulting symbiosis constitutes a clear example of cultural fusion produced through the integration of different agents that generated the material and symbolic corpus that transmigrated to Latin America. Here, the imported traditions were further integrated with local to generate a constructive language characterized by the simplicity of materials (brickwork, stone, gypsum, lime) and by easily identifiable specific constructive types such as wooden ceilings and counter-ceilings. Other characteristic elements of this synthesis are the capillas abiertas, the capillas posas and the balconadas. The Mudejar tradition endured in time and kept adapting its forms. It remains a fundamental lens for reading the colonial architectonic model and the development of Latin American Baroque.

ID 186

Port of Ischia: From a Volcanic Crater to a Traffic Hub. Or: From a Natural Disaster to an Artificial Disaster

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The Port of Ischia is an introverted space, a closed natural body of water. It remained as such until 1854, the year it was transformed from a lake into a port by removing a section of land to connect it with the open sea. The edges of this volcanic crater were occupied over time by a mantle of discontinuous constructions, from which three monumental elements that speak to the history of the island emerge: the church of Portosalvo, the Ancient Municipal Baths and the Palazzo d'Ambra. This important historic and environmental space was gradually modified as a consequence of Ischia's development from an "Island of land", dedicated primarily to agricultural activities, to an "Island of water", devoted to tourism and bathing activities. While maintaining their original typological-morphological characteristics, the spatial qualities of the constructions defining the perimeter of the port were altered by their forced adaptation to needs dictated by a surplus of activities and traffic. For decades the port of Ischia has been the principal hub of the many connections and activities linking the island with the mainland. This has produced a state of degradation whose only possible remedy lies in the selection of the activities that take place here, and the delocalisation of those that are not compatible. The text presents a hypothesis for the regeneration of the port of Ischia through the redesign of its perimeter and the refurbishment of its three most representative constructions.

ID 188

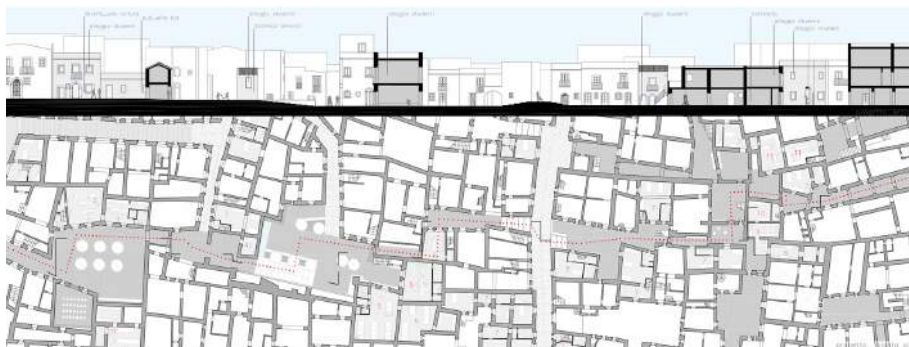
Santo Antônio at Paraíba and Santo Antônio at Paraguaçu: two Franciscan church interiors affected by disaster.

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Since ancient times disasters such as earthquakes, floods, volcano eruptions and tornadoes have destroyed relevant pieces of world heritage. Notwithstanding, one must be reminded that the worst disaster is not that caused by nature, but the one provoked by men when they subtract from original sites important physical components which have been historically consolidated as people's cultural identity and tradition. Taking part of a major project of colonization established by the Lusitanian Crown in which they played an important role in the catechism of natives, Portuguese Friars Minor founded thirteen convents in North-East Brazil. Between the end of the seventeenth and eighteenth centuries the respective conventual churches happened to have their interiors carefully embellished in order to best meet Post-Tridentine recommendations of using art as an efficient tool of evangelization. This article aims to explore two works of architecture and art produced by Franciscans that have disappeared from their original sites – the church interiors of Paraíba and Paraguaçu. The investigation is based on two relevant indicators: the study of kindred Franciscan church interiors, since all thirteen houses were furnished with similar models, and the access to rare iconographic data from the twentieth century that reveal the original look of the lost spaces. The results further highlight the importance of safeguarding documentation as an ultimate tool to register cultural heritage.



ID 189

From Renewal to Urban Regeneration: a research to rehabilitate Ortigia's marginal places.

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A research methodology has been developed for the Euro South Hub project, within the Operational Programme Italy Malta 2007-13, in order to implement urban regeneration strategies. Recent recommendations about the development and the economic promotion of Ortigia (included in Unesco's World Heritage List in 2005) aimed at upgrading the systems used to attract tourist flows, pose some problems involving issues such as the identity of a specific place and its preservation, after having identified its peculiar characteristics. Reflections about buildings lead to further reasoning up to embrace a place's social and intangible components; so, regeneration projects are based on a philosophy able to convey the feelings of the community: both resident people and those who live there only for a limited amount of time. The research has been carried out with the aim of expanding the knowledge of Ortigia's urban operating principles, and it focuses on an area characterised by an irregular arrangement of activities and an uneven conservation status of urban fabric. The paper will illustrate in further detail the analysis method which has been adopted, that is based on the parallel use of a layering technique and on sociological analysis. This leads to a better awareness of the analysed urban spaces and of weak links in particular, where it is necessary to carry out actions in order to recreate a shape that was lost and to make it up-to-date at the same time.

ID 190

Stresses mapping of compound vaults: analysis and design of structural strengthening

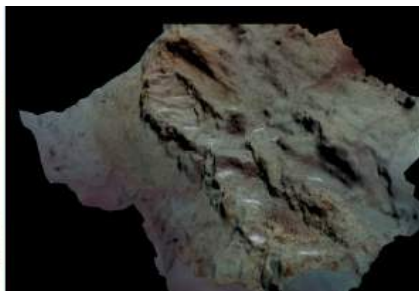
Renato S. OLIVITO

Saverio PORZIO

Alessandro TEDESCO

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The aim of this work is to show the evolution of the stress state within the compound vaults, namely those originating by the intersection at right angles of two-barrel vaults, by means of chromatic-read maps. For each cylindrical groin in cross vault and cloister vault, a stresses' composition process is performed by applying the static forces according to the load combinations required by Italy Code for Structural Design (NTC 2008). The stress value is so determined for each point belonging to the vault to which it will be associated the respective color. The different colors, as well as showing the most critical areas, define the so-called isostatic curves of the principal stresses. Based on the isostatic curves obtained, the structural strengthening is designed using the integration between traditional (spandrel walls and reinforcement rings) and innovative techniques (AAC – Autoclaved Aerated Concrete – and FRP – Fiber Reinforced Polymers). These studies are carried out on the former College of the Jesuits of Amantea (CS) and they arise as a methodology applicable in any context of structural rehabilitation of cultural heritage.



ID 191

Vivara. From prehistory to digital information

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During the Mycenaean era, the prehistoric settlement of Vivara was a place of intense exchanges between civilizations and people traveling throughout the Mediterranean along routes that, from the Near East and Greece, skimmed the shores of North Africa and then proceeded up to land on the coasts of southern Italy. To the island of Procida, pottery and objects arrived that, like live furrows of ancient sea lanes, the archaeological excavations are returning from the earth, and in this earth, which was mud that swept over everything, signs of disastrous events are detected, signs that have severed the succession of historical events. The subjects of our research are the new methods and tools for the detection of contexts (3D laser scanner devices for the scanning of submerged heritage, image-based systems, structured light scanners) and new forms of management and representation of data for the understanding of new forms of cultural fruition. What is being proposed here is an active approach to data production, aimed both at the recording of the moments and the space of an excavation and both at the verification of forms of their use within a scalar logic that includes the study of phenomena, interpolation of data for complex analysis, teaching carried out in context with a simultaneous research activity, and forms of multi-level representation of digital information. Hence the results of our research: the activation of highly specializing training; the opening at Terra Murata of the TERRA exhibition, where every year the results of the experiments are illustrated.

ID 192

Role of heritage conservation in new regional planning system in Slovakia

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Even though Slovakia is a relatively small in size, the country is marked by significant regional disparities and unequal distribution of resources. Naturally, more affluent and developed parts are located in the west around the capital city Bratislava, while the lagging parts are located in the east and suffer from high levels of long-term unemployment, underdeveloped infrastructure, migration of young people. However, these parts are rich of natural and also cultural heritage, such as castle ruins, châteaux and historical parks. Addressing these disparities, in 2015 Government introduced a new method of regional planning - 5 years 'Action plans', on the level of district scale, with the main aim to reduce unemployment via bottom-up processes promoting local-specific activities and self-sustainability of the regions. Within the Action plans, heritage conservation activities present one of the main pillars of catalysing the development of the regions, not just focused on the tourism business, but also serving as a tool for large-scale employment-generating activities. These activities include programmes for employing long-term unemployed in the conservation of castle ruins, building local knowledge and culture on the basic construction and conservation skills, programmes for maintenance of immovable heritage. Proposed paper will focus on the role of heritage conservation in already 12 implemented Action plans, looking into more detail at the specification of these programmes and process of their incorporation in the complex regional planning. Paper will also critically examine potential results of these activities for the regions as well as the heritage itself.

ID 195

Built Heritage Information Models development for on-field checking of restoration works

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The management of a construction site implies multiple tasks for what concerns both contractors and client's team. The expected results in a construction projects need to comply the requirements of quality, planned times and cost respect, sustainability, safety etc.. It is now well known how the use Building Information Models, not only for the design but also for the management of projects, can improve the quality of a building process thanks to the amount of information available in the BIM database. This is valid both for new construction works and also for restoration works, despite the complexities of the latter. Starting from this point the presented research aims to study the levels development (LOD) of models with the scope of using such information for the works advancements checking during the realization of restoration works. In fact, as will be demonstrated in the paper, the on-field management with the use of such models, if correctly developed and used, can simplify the work of contractors and clients inspectors during the works realization. In particular will be discussed how to develop a model of an existing building, and of the restoration works to be realized on it, in terms of elements to be represented and information detail. This with the aim of inserting an amount of information useful for an on-field assessment of works. A case study is also presented in which the studied levels of development were tested in a real situation

ID 197

Evaluation of seismic behavior of corroded reinforced concrete structures

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Corrosion of reinforced concrete (RC) structures and subsequent loss of seismic capacity due to materials degradation has become a safety problem for all industrialized countries. Approaching a retrofit project of a corroded structure, it is really important to have theoretical models that adequately represent materials degradation taking into account all the issues of the phenomenon, both environmental and structural ones. This paper presents an evaluation of the reduction of seismic capacity of corroded structures in order to understand their seismic behavior when affected by different degrees of corrosion. Particularly, they were defined three different levels of corrosion (in terms of loss of cross section, loss of stirrups and longitudinal bars) and three different configurations of attacks (in term of number of corroded structural elements). The aim of the present paper is to investigate about the seismic vulnerability of corroded reinforced concrete structures, by performing Push-Over analyses. It results in a new appropriate tool to design a retrofit project or to asses existing corroded RC structures, especially to define the priority of intervention and the kind of structural capacity in need to be restored. Global seismic behavior was compared to global seismic behavior of non corroded structures. This represents a crucial step both in the assessment of the seismic vulnerability and to design structural retrofit interventions of corroded buildings

ID 198

Impact of inorganic matrix strengthening systems on heritage masonry structures

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The strong vulnerability shown by the heritage buildings requires the use of innovative materials for their retrofit, to benefit of best performances, but respecting the compatibility. Such innovative materials, in many experimental programs, have shown to be effective in the retrofit of existing structures. However, when the structures are characterized by historical interest, these techniques can be incompatible with the conservation and restoration criteria. Furthermore, many heritage buildings are made of materials like as adobe or masonry characterized by a poor quality. These materials often show a low mechanical compatibility with high-performing retrofit systems. In this background the strengthening systems based on inorganic matrix provide some great advantages. In particular the inorganic matrix ensures a high compatibility with the substrates. These strengthening systems can include fibers made of several materials. This is a key aspect to retrofit buildings made of poor materials. In fact natural fibers are characterized by a high mechanical compatibility with low strength masonry buildings. Additionally these systems are highly recommended to strengthen curved structures like as arches and vaults. In this work, the impact of these strengthening systems has been assessed on ultimate behavior of heritage buildings. Special attention has been focused to strengthening of curved elements. In particular, the impact of several strengthening systems on the ultimate capacity of curved elements has been assessed.

ID 199

Making mobility more sustainable. Findings from a survey in Southern Italy

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The main aim of this paper is to give a contribution in a wider debate concerning the sustainable mobility through the

involvement of local community. More specifically, the main goal of this paper is to analyze the public transportation

demand within spatial contexts in which the modal split is generally in favor of the private mode. In particular, it aims at

examining the overall mobility needs, taking into account not only the effective demand but also the potential public transportation demand.

In order to investigate the potential public transportation demand, it is evaluated how socio-cultural dimensions influence modal choices, in particular the choice to use the public transport.

Starting from such a perspective, the paper presents the main outcome of an empirical research carried out in the Province of Caserta (Southern Italy), in 2011 characterized by a very low use of public transport services.

The paper is organized into four parts. Firstly, a short presentation of the case study is presented. Secondly, the question of research and the questionnaire is introduced. Thirdly, the main results of analysis are presented and the conclusions are discussed. The main survey outcomes do challenge and dispute the necessity to expand the analytical domain of the willingness to use public transportation services to better account for socio-cultural behaviors



ID 200

Communicate to alert; know to avoid

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Catastrophic events, such as earthquakes, landslides, avalanches and floods that have happened in recent periods bring our attention towards finding an efficient system to communicate the risks and behaviors needed to bring the negative consequences to a minimum.

We are not able to prevent an earthquake, a flood or an avalanche, but we have to learn to control the effects of them by reducing the size of the consequences.

Under these considerations, the Department of Architecture and Design of the University of Genova and the Public Safety of Genova have been developing a project for a better communication and awareness with the goal of identifying an efficient network of communication which would be able to educate the citizens about the correct behaviours in case of a calamitous event.

The purpose of this Communication is to identify the most efficient media and messages for the design, to convey to the viewers in order to reduce the damages to the heritage and to the people.

After the first year of experimentation, the collaboration became even more active and started to gain important results, by defining very clearly the type of communication and relatable language to make it so that each kind of viewer will be able to know the risk and avoid the danger.

ID 201

The design of volcanic ground, from disaster to heritage. Architecture and landscape in Macaronesia

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The Atlantic Ocean Islands situated west of the Strait of Gibraltar, off the coasts of Europe and North Africa, which have been grouped by the ancient Greek geographers under the name of Macaronesia—fortunate Islands—, they have turned out to be a lucky place for architecture today as well. From the beginning, the human settlement plan here has been based on listening. This condition, on one hand, directs the search for a dynamic balance with the forces of volcanic nature bearing fertility but also destruction; on the other hand, it has helped to absorb and integrate all civilizations gone through these outposts in the exploration of new worlds. The isolation deriving from borderlands condition and the presence of a lush nature whose “luck” comes from the same soil, rough and dynamic, yet threatening, have led to a particular attention towards sympathetic, resilient and adaptive forms of living. The study highlights the peculiar characteristics of a design approach careful to the telluric dimension of architecture and both to the relations with the environment and to local culture roots, through the analysis, largely developed on the field, of some exemplary architecture and landscape architecture works, often linked to the numerous World Heritage sites on the islands.

ID 203

Design driven innovation for cultural heritage

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In the modern age, where mass manufacturing gives way to a diversified production and complied with local conditions and needs of the individual user, there is a need to find an answer to the demands of contemporary culture.

The design for the product culture and value system of the place became one of the decisive factors for the quality of the space and services to citizens and users in general, when designing a town system product, appropriate to the local and international context. The cultural product is a complex system made of physical and immaterial side join together, the design of a complex cultural product system is an assets of integration of two dimensions: specialist-manufacturing and social-cultural one.

According to this logic, in line with the guidelines promoted by the European Union and Unesco, culture-oriented development models promoted by design, are intended to increase the value of cultural heritage in its historical function sheet, symbolic, social, civil, and are aimed at the development of platforms and connection systems able to relate territories and communities through culture and knowledge. Design driven innovation is a new idea of cultural project in the sector of additional services of cultural heritage, for example "Continuum Vitae" by Studio Azzurro. It is a multimedial work developed within the project "maritime idleness" of exploitation of roman leisure villas on the Amalfi Coast, in the idea that there is continuity between our current and lives of the ancients who lived in these places.

The strategic designer work together the archeological site to define strategy, to improve cultural achievement, able to compete, get better communicative perspective, promotional appearance and develop innovative cultural product to make visible all the ancient human activity that became a cultural diffusion channel more integrated into the target of Cultural growth of tourists.



ID 204

Italy's thermal baths at the beginning of the 20th century. Tourist itineraries and attractions to the territorial promotion

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The thermal establishments, born during the Roman era, went through contrasting growth and decline phases. After being rediscovered during the 15th century, they first became exclusive locations to the aristocratic élite and then, during the 19th century, the middle class favourite destination until, in the middle of 20th century, it was registered a real mass phenomenon able to transform sites and scenery, leaving still visible traces on the territory.

During these years, there was an increase about the built of receptive structures with the birth of transit and stay hotels in the Baths and treatment centres. But in urban basis, in spite of a request and a relative increasing offer, until the mid-thirties of the 20th century, the land control took a long time. In fact, only with the advent of Fascism, Mussolini realized that a better tourist offer would have been abroad the best form of propaganda, so much that, between the 1931 and the 1939, it was registered an average of three millions of foreign tourists in Italy. By referring to some case studies, the intention of this paper is to contribute, even through some unpublished documents, to the history of the wellness tourism in Italy and to the role it had both from the social point of view and from the economic and politic ones to "Bel Paese".

ID 205

Modeling the catastrophe, and beyond. Digital History and Visualization methods for multiscalar process description of the Nubia Temples flooding

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World heritage sites are exposed to the impacts of natural and human-induced catastrophic events which threaten their integrity. According with UNESCO the loss or deterioration of these outstanding properties have severely negative impacts on local communities because of their cultural importance and because of their socio-economic value. The paper focuses on a multiscalar human-induced environmental change with catastrophic effects on the Nubia temples and on the prospective of using a multiscalar process description for studying and visualizing historical and environmental changes related to disasters. Beyond the disaster, the displacement both of temples and villages provoked other kind of damages. The case study presents how the disaster and the risk of damages on Cultural Heritage can be recorded and monitored at the scale of temples, artistic elements (i.e. statues, decorations), till the large portion of territory including villages. The paper highlights the disaster caused by the High Aswan Dam as a warning for an international awareness on a sustainable development that needs to take into account the cultural heritage. It discusses the cultural memory as crucial for Disaster Risk Reduction strategies. Our approach uses 3D models in order to collect data and to make understandable risks, damages and solutions. Historical research and Visualization methods create a fresh context of knowledge for a case study strongly representative of the World Heritage Disaster.

ID 206

The promotion of the historical, cultural, and landscape heritage - Active citizenship.

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In Italy, the management of the historic, artistic, cultural and landscape heritage and the issues related to its conservation and sustainability are an increasingly urgent issue to discuss, especially in light of the economic crisis of recent years. The policy, in the past, has focused mainly on large restorations, neglecting investments in conservation, an improved accessibility to the heritage, the dissemination of good practices for the protection and maintenance of the same, the enhancement of the landscape. Moreover, to make matters worse, the continuous risk of deterioration, caused by environmental conditions of the context in which the assets are located, and the lack of appropriate forms of prevention of natural disasters, make the situation even more critical. This study, through the literature and comparison of certain urban realities - Italy and European - aims to present a path towards active citizenship, in which underutilized public spaces and abandoned buildings are transformed, redeveloped and requalified. Virtuous examples of planning, protection, and enhancement achieved through collaboration among the different social actors, public and private, where the application of good management practices, conservation and development of the historic, cultural and landscape heritage has produced well-being to the community and has increased the economic development and tourism to the city.

ID 207

The grand staircase of the University of Pavia: construction techniques and decay of stucco decorations

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In the 2nd half of XVIII century, current Lombardy was part of the Holy Roman Empire and the University of Pavia was the only one in the region. During the reign Maria Theresa of Habsburg and other son of Joseph II of Habsburg-Lorraine, Enlightenment ideas spread, and universities received new impetus and funding; university architecture had a significant impetus too, with a series of works designed by important architects (e.g. G. Piermarini and L. Pollach). However, only in 1819-23 a comprehensive plan for the expansion and improvement of the university's palace was implemented by Giuseppe Marchesi. The expansion of the palace required the design of a new monumental staircase, appropriate for the magnificence of the refurbished building. Despite the simplicity of amateur neoclassicism, the grand staircase has rich stucco ornaments. Walls are adorned with various cornices and deep niches with vaults decorated with stucco flowers. The large barrel vault has lacunars inside of which are large stucco flowers in high relief. About 20 years ago leakages from the roofing occurred and some of the stuccos were severely damaged. To protect users a net was put below the vault and over years a number of stucco fragments gathered on it. A multidisciplinary research is currently ongoing on the stuccos aiming at defining restoration work. The careful observation of intact flowers and of damaged ones allowed to understand manufacturing techniques; mineralogical analysis were done on fallen fragments and on small samples, allowing to understand the peculiar composition of the stucco and to characterize decay.

ID 209

Fragility and resilience analysis of a cultural heritage centre in the district of Naples

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Many catastrophes due to natural events occurred up to now lead, just recently, to move from a culture of emergency to a preventive approach on the seismic risk topic, which can be also included in a theoretical and conceptual framework of resilience and sustainability. This requires the knowledge of seismic vulnerability and hazard of urban areas to be investigated.

In the current paper, the RISK-UE quick method for vulnerability survey of an urban sector of Marigliano, a town in the district of Naples, has been applied. This vulnerability assessment method involves the evaluation of earthquake scenarios based on global impact analysis of one or more plausible earthquakes at city scale. More in detail, this paper aims at defining, starting from the seismic vulnerability analysis of the urban area analysed, a method to analyse the urban resilience by developing resilience curves, that describe the attitude of the urban system to recover from possible seismic events that should occur in that site.

The vulnerability analysis results showed that for modest seismic intensities, buildings show a very slight damage level, whereas for high grade earthquakes almost all buildings should collapse. Moreover, from resilience assessment analyses, it was noticed that the resilience probability expected values for typological classes of the investigated sector tend to decrease for buildings made of low-quality masonry.

ID 211

The management of natural disasters: earthquakes and catastrophic risks. The role of insurance industry.

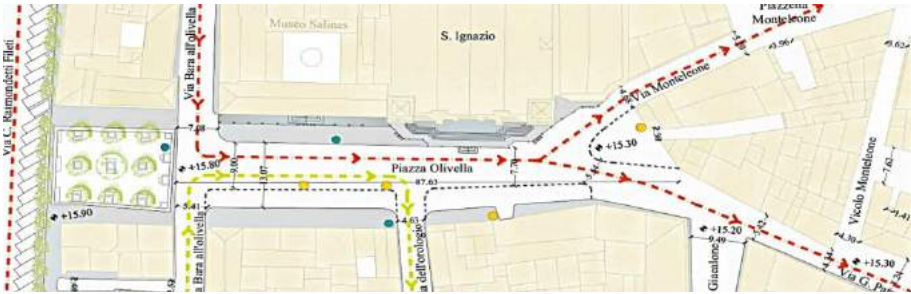
Antonio COVIELLO

Giovanni DI TRAPANI

CNR _ IRISS Istituto di
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Recent research conducted result is evident the increase in recent decades, the costs and therefore the economic value of the damage caused by natural disasters. This phenomenology that can only be attributed also to the increased concentration of populations residing in the city, which become larger and larger and that have developed in areas characterized by a territory too often exposed to strong catastrophe risks.

The analysis and comparison of databases shows that in future disasters will be more frequent and disastrous in the world. In this paper we took to represent the possible instruments to bridge the gap of knowledge, and more generally, the experience so far identified in the scientific literature that today still represent a substantial obstacle to the proper construction of a possible range of instruments fully supported and able to provide full coverage of catastrophic risks Experience has shown that for the success of any initiative complex human need to limit the risk of governance. Insurance companies during the crisis have highlighted critical in the management of the business but also solutions, which have emerged as international experience, the evolution towards a new governance. The allocation of risk is to deploy its effect on a different proportion of the population or wider, while the reduction of the risk involves scaling the amount of losses that are realized.



ID 213

The emergency of resource flow management in Palermo, Italy Capital of Culture for 2018. A proposal for a circular management integrated in its old town center.

Antonella MAMI'

Elvira NICOLINI

University of Palermo, Italy

The present study aims at examining the gap between both the exponential openness of Palermo to the international scene, causing a wide acknowledgement of its cultural attractiveness, and its unflappable management of city services that will face after the consequent increase of tourist and urban flows to the historical and cultural areas of the city. Our interest is especially focused on waste to be intended as resource flows in a circular management system. Compared with the other urban areas, the management of city services in the old town center is characterized by some operative issues to be faced: its specified morphological urban texture and its immaterial, psychological, and symbolical values acquired over the centuries. The overall situation of the old town center of Palermo is featured by a delayed reply to the current emergency that, of course, cannot be considered as a sustainable reaction to the difficulties met. The circular re-organization of a service - such as the management of material flows - is the ideal opportunity for a landscape regeneration: in this case, landscape is not just a mere protected site but it is involved in circularity becoming a resource, an attractor, and an active component playing an important role for the local economic development. In other words, it is a resource to be enhanced through a long-term planning and led by a systemic vision where both tangible components (technologies and infrastructures) and intangible ones (socio-cultural identity and relational factors) are boosted and complementary.



ID 214

The landscape of production and the design of Olivetti factory at Marcianise

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The development of industry, from the industrial revolution onwards, has had a significant impact on the landscape, so as to give rise to a new landscape: the industrial landscape. Today, many industrial centers arisen in the post-war period reveal a panorama made up of large disused warehouses, operating companies, and buildings of great architectural quality, as in the industrial center of Marcianise. Inside, there is a factory made by one of the most influential designers of the twentieth century, Marco Zanuso. At the height of his creative history, he met an entrepreneur who has elevated the workplace to an ethical dimension, Adriano Olivetti. The aim of this study is to evaluate developments, technological experiments, utopias and missed opportunities of a territorial transformation in which the Olivetti factory played an important part.

ID 217

Renato Avolio De Martino an interpreter of the Neapolitan post-war reconstruction.

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The disasters of World War II left in Naples, more than in the rest of Italy, a void to be filled. The need to restart an economy that had suffered from war trauma, combined with the urgent need for housing for displaced and homeless people, found its natural response in the vast process of reconstruction that began after the war.

A large number of professionals took an active part in this process, having to both meet the public demand as the private one in a weak regulatory environment, where the lack of available planning tools gave way to various interpretations, often influenced by speculative interests. This article focuses on the practical contribution of the architect Renato Avolio De Martino to this period of reconstruction. De Martino was an active figure in the Neapolitan architectural Panorama, albeit unrelated to the theoretical debate and the world of academia. He engaged in various sectors, ranging from public to private, residential and industrial, always keeping a good balance between the wishes of the client and the environmental problems linked to the local territory, without ever distorting his vision of architecture.

The analysis of his architecture presents us with an innovative figure, which is tied to the principles of rationalist architecture that will accompany him throughout the course of his long professional career.

ID 218

The Giant Canvases of Tirana: Coloring of the City that Changed the Visual Perception and Identity

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The collapse of communism left Tirana in the 90s as a city filled with gray cubes of precast concrete or silicate brick residential construction. Arrays of unnamed buildings. In spite of that, there was a perfect geometry of rational architectonic forms and volumes with clear and well-defined urban boundaries. In those buildings, construction materials and architectural elements were clearly visible. The vigorous economic development oriented the attention of Albanian architects towards the possibility of creating new buildings neglecting the need for rehabilitation of existing building stock. In this urban environment in search of visual identity artists, invited by the municipality, found the perfect canvas to experiment their fantasy. Buildings in Tirana were transformed in giant canvases. These interventions erased the rationalist identity and perception of the residential blocks built during the communist period. This paper aims to analyze how has changed the visual perception of those architectural spaces in Tirana after a color intervention has been applied by artists and painters. The research is based on data obtained from physical observation of the built environment and computer models analyses and stimulation.



ID 221

*Disasters, destruction and new urban polarities.
The new square in Rionero in Vulture*

Ef시오 PITZALIS

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The new "Piazza" is the result of the union of three areas affected by the damage done during the earthquake of November 23, 1980. It is the oldest area of the city of Rionero, located between Piazza XX Settembre and Piazza Giustino Fortunato, which overlooks the historic Palace of the famous scholar of the Southern Italian question. Piazza Giustino Fortunato occupies the upper part of the entire complex. Piazza XX Settembre, home to a weekly market, is at the lower level, the closest to the park. Between the two squares is located the area formerly occupied by the Theater of war veterans: Liberty building demolished because of serious damage reported. Overall, the Square following a single plan all along its extension. In terms allusive, it recalls the ancient track of Rionero river: the place of origin of the whole city. In terms evocative, the square is set up as an auditorium set against natural contours of the site. A planimetric system concentric sectors is willing to highlight reference points perspective. The whole project evokes the ancient function of the square: the privileged place of our ancestors here were exchanging products of the earth and the words. In fact, not far from the premises of the theater demolished there is a new space for exhibitions and shows. Access is at altitude while the auditorium is underground, lit by large arched openings playing a elevation waves in contrast to the circular sections of the "Piazza"..

ID 222

Tourism industry: the role of thermal baths holiday between history and enhancement

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Within the numerous tourist types, the “hydrotherapy” is a very important sector.

From Roman times we witness to the creation of the first thermal baths, become real places of encounter and a source of mental and physical well-being, creating a tourism centered around the Spa-centers, promoting the transformation of the urban context and the body care.

Although this sector has had a continuous swing between moments of greater or lesser success, after the substantial increase of tourists had to the nineteenth century and the crisis had in the early twentieth century, the present society still has positive image of ‘spa industry.

Today this type of tourism is linked to the “wellness” industry and the improvement of the spa facilities, enhancing the value of the areas in which they are located.

The research aims to the analysis of the transformation of the spa resort places that characterized the nineteenth and twentieth century, focusing on the importance attached spa industry to architecture and the environment seen as opportunities for enhancement of the territor.

ID 223

Tangible/intangible: destruction and reconstruction of the Iranian site of Arg-e Bam (Bam Citadel)

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Bianca Gioia MARINO

Jafar ROUHI

University of Naples
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The devastating earthquake of 26 December 2003 Bam earthquake had tragically destructed the historic city of Bam, and in many cases, it causes the loss of a considerable part of the Bam's architectural heritage, concerning the identity of the city within its cultural landscape. This earthquake in its subsequent complications has seriously damaged the image of cultural landscape of the original core of Bam named Arg-e Bam (Bam Citadel), which is recognized as the largest adobe-mud brick complex in the world.

After this seismic event, Arg-e Bam was simultaneously entered on the UNESCO's WHL and WHLD in 2004, and through considerable efforts made by the Iranian State Party with the support of the international communities, the site was removed from WHLD in 2013.

The reconstruction program of Arg-e Bam represented the reaction to a traumatic phenomenon and also to response to the sense of attachment of Bam's people who have emotionally close connection with Arg-e Bam, as the symbol of Bam's culture, tradition and history.

Several foreign research teams have been involved in the Recovery Project of Bam's Cultural Heritage (RPBCH) and they have experimented reconstruction methods to reconcile traditional building techniques and safety exigencies.

This work aims at verifying the correspondence of the reconstruction program results with the current international conservative guidelines, with reference to the Italy culture too. The complex Iranian situation that is being analyzed will be deepened to set out a comparison between the local exigencies of development and the cultural acquisitions in the field of restoration: in particular concerning the respect of the tangible and intangible authenticity, which represents the focal and contemporary point for any intervention on the cultural heritage.

ID 224

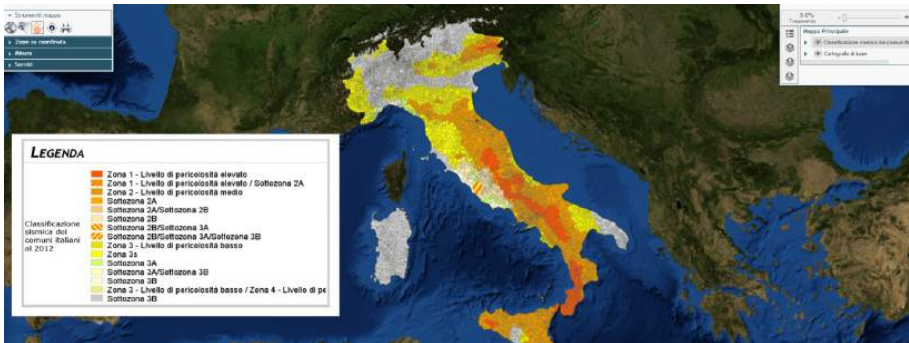
The digital representation of the baroque in historic places.

Giuseppe DI GREGORIO

Francesca CONDORELLI

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Catania, Italy

The development of digital survey with Structure From Motion (SFM) technology, a few years away from its introduction and diffusion, allows to make some thoughts about the feasibility of these systems. This sector, rapidly evolving in previous years, has reached a point of stability for the quality of the current products. In the literature there are a lot of papers about the archaeological survey and small architectural details. Today it's possible to make the survey of facades or parts of buildings both for archaeological and architectural purpose. Subject of this work is a comparison of a survey made by the laser scanner and the point clouds of the same object obtained by the SFM software. The occasion was provided by the facades of some baroque religious buildings in Catania, previously surveyed by 3D laser scanner, and today again photographed for the elaboration by the Zephyr 3Dflow software. The bibliography is recent and it is based on papers about SFM experiments, in the acts of the previous three International Meeting of Teachers of Representation Disciplines and the Congress of the Italian Union for Drawing. The methodology used in this work takes into account the comparison of results obtained by high dense image matching procedures and digital survey already performed by 3D laser scanner. In particular, we want to verify the accuracy and the reliability of metric measurements, of the point cloud, of the mesh and of the texture. The aim is to determine how far a SFM survey can be considered a reliable alternative to a laser scanner survey.



ID 225

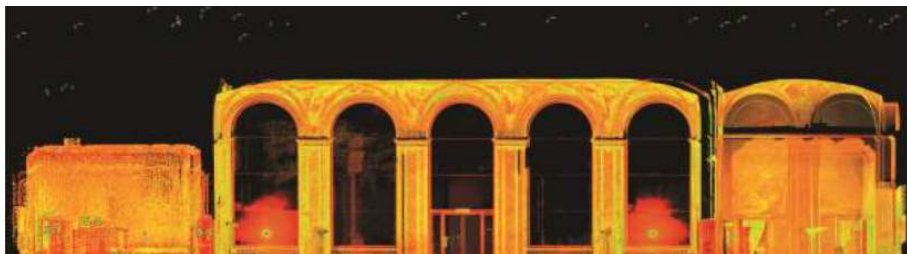
Knowing the territory through free platforms

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The rapprochement between man and nature, specifically between man and environment, is the cornerstone of who feels deeply the responsibility towards future generations who have the right to inherit the resources of those that we ourselves have inherited from previous generations [1]. This need does arise the need to analyze, monitoring, managing critically the changes that contemporary landscapes are living. Therefore, the multi-dimensional representation of architecture and its first elements is the only tool that contains all the knowledge and design requirements, thus enabling the measurement of the pathologies of today's scenarios.

The representation is the process by which a concept, a content of perceptions, imaginations, judgments and ideas, comes to consciousness and as this is so reproduced. So the representation is the mental process that is made real. In the specific case of this scope of the representation office it is the only real operational scenario that encompasses the technique for recognizing the critical issues and places resources. The representation to be even more effective for the government and land conservation must be applicable on the date, and therefore the need of immediacy data acquisition and software, it is here that come into the Open field instruments.



ID 227

The lost theatre: scenography and functions of the original entrance to Villa Farnesina

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The traumatic, but not destructive effects of an earthquake are similar to the consequences of the repeated transformation and/or manipulation of a building over thousands of years. Appreciating the importance of this proposed similarity, a clinical-scientific research on potential stem cells can be considered comparable to a critical survey of a building in order to trace all the construction phases since its initial foundation.

This is the approach we adopted to study Baldassare's "invention" for Agostino Chigi: Villa Farnesina in Rome. Today the building is completely transfigured due to neglect and the changes made to it over the years. Our recently completed study also allowed us to establish its harmonically designed layout.

In this article we focus on Peruzzi's design of the original building and his idea to place an outdoor area, deliberately designed as a stage, in front of its main entrance.

ID 228

Federal And State Historic Preservation Tax Credits In The United States (U. S.) And Economic, Hou- sing And Other Benefits: Update To 2016

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In our discussions with our Italian colleagues, it is apparent that one of the biggest constraints to historic preservation is the financial gap between the costs of an historic preservation project and available resources. In the U. S., a primary means of bridging the financial gap is through the use of federal and state historic tax credits (HTC).

The U.S. nationally has a considerable historic stock with about 1.6 million buildings listed in or contributing to historic districts identified in the federal National Register of Historic Places (NRHP) which is maintained by the federal National Park Service (NPS). Not surprisingly, many of these properties would benefit from rehabilitation. The federal HTC (FHTC) is a federal income tax credit equal to 20% of the qualified rehabilitation cost of income-producing historic properties (further detail on the federal HTC in Table 1). In other words, a rehabilitation investment of \$1 million in an historic hotel, office building, retail store or apartment rental complex would reduce the federal taxes owed in the U.S. by the investor by \$ 200,000. (About one-fifth of the NRHP 1.6 million historic buildings are income-producing.) The FHTC is administered by the NPS and state government historic agencies. Started in the late 1970s, the FHTC has cumulatively been used in about 42,000 completed projects and the rehabilitation associated with the program has in the aggregate amounted over 1978 through 2016 to about \$132 billion in inflation-adjusted 2016 dollars. In 2016 alone, the FHTC rehabilitation activity amounted to about \$6.5 billion.

ID 229

GeoForm and anthropic forms: the Sarno River's power of resilience.

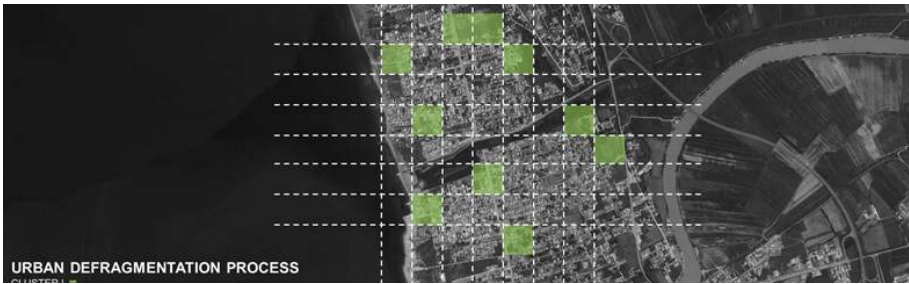
Daniela CACACE

Università della Campania
'Luigi Vanvitelli', Italy

The Royal Decree Law no. 225 of 21 March 1928 reestablished Pompeii's identity, a territory that was already known and identifiable in Sarno Valley, through a social and cultural awareness. The reading of some maps, from 1815 to date, showed the places before and after the promulgation of the Decree, opening up evaluations on the modification of the territorial tissue, from purely agricultural then, to urban and industrial in recent decades.

An intersection between the catchment area of Sarno and the road network – after cataloguing the data on a GIS platform – put in evidence the canalization and the burial of some waterways, in order to allow urban expansions, maybe in the 1960-1980s. In fact, along the way of Sarno River, there are many overflow areas, that nowadays are occupied, as a result of destructive human actions.

With a critical redraw of the geo-form and the anthropic forms of Sarno Valley over the centuries, it is possible to analyze the negative works and create favorable conditions to inspire the natural power of resilience of this territory.



ID 231

Density and permeability. Urban resilience and new eco-logical connections

Giovanni BELLO

Pegaso Telematic
University

The evolutionary dynamics of urban processes have always been closely related with the territorial ecological processes and cities, with their forms and functions, they have helped to ensure that these landscapes have been slowly fragmented, “crumbled”, impoverishing ecosystems and their ecological value.

In this scenario of “fake” development, interpretative and planning paradigms that had conditioned the gaze to choices addressed to the importance of the city as the central element of urban issues, have undergone a rapid aging leaving space for new models of development and to an urban planning hybridization with other disciplines related to the landscape and its many aspects.

The redevelopment of the line of Castel Volturno city costs exceeds these dynamics, it projects new ones by putting the gaze on the importance of landscape networks and on how these draw the territories and help to transform the “disasters” in “new cultural identity”.

The proposed strategies and tactics are based on the design of public spaces, on their relational value, on the role they played in the reconfiguration of urban spaces and for the ecological re-stitching of these places already in strong ecosystem depression. The conducted choices point to the urban resilience, to the ability to adapt to the continuous changes of natural and anthropogenic processes that affect them, up to regain a state of systemic balance, fundamental equilibrium for the sustainable development of these territories, of these landscapes.

ID 234

Atlas of the Triconch's Architectures in the Mediterranean. The Roman Africa

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The contribution comes from a research in the Laboratory of History and Criticism, conducted by Prof. Danila Jacazzi with the collaboration of Professor Maria Carolina Campone, on the theme of diffusion of triconch ancient Christian world. The study, part of which is still in progress, has produced a triconca atlas architectural as one of its first results which synthetically anticipate only the area relative to North African, analysed in detail by the architect Raffaella Fiorillo. The archaeological record and the recent progress in the study of ancient art on Christian art have provided interesting new data on the spread of architectural models in the whole Mediterranean region. The trichora cell is used in several territories of Roman Empire principally as a representative hall in the very ancient villas, but also as a funerary and thermal environments. Between the 4th century and 6th century the spread of triconch reached all the Christianised areas. It was initially used in funerary purpose in martyria; later the trichore cells were used in the configurations of basilicas: triconch presbyteries find in Egypt, Algeria, Libya, Palestine and Jordan. The three-lobed form fits well in symbolizing important christian concepts. The short hallway before the space occupied by apses alluded to the Cross, the first emblem and the most important symbol of martyrdom and redemption. The tripartite division alluded to the Trinitarian concept, as suggested by the churches dedications followed of trefoil (Lérins, Vercelli) and the mosaic decoration of the subject of the Trinitarian choir of Basilica Nova in Cimitile, described by bishop Paolino from Nola (Epistle 32).

ID 235

'Impressioni di memorie' Plural accessibility experiences in Naples. Methods of preventive protection of cultural property

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On the occasion of disaster it refers to comforting value of memory. Memory is comforted by objects that make it concrete. The same objects which we consider cultural goods are also representation of the culture of the places. It is therefore necessary that happen disasters to have greater awareness of the historical and artistic heritage. It should enhance the possibility of access to even artistic heritage through the playback methods of the property.



ID 236

Casselli's artistic heritage in the urban views of Benevento

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After the disaster of the earthquake of 1794, the most interesting first views of Benevento, that return the beauty of the city, are offered by Saverio Casselli's hand, architect and topographer, who works at the service of the Papal States between second half of the 18th century and the first third of the 19th century. Casselli's remarkable artistic quality, already proven in the note design topography of Benevento, drawn up as part of the urban renewal program promoted by Pius VI, to which is dedicated the topography, are better expressed in the three views of the city, preserved in the Library of the Archbishop of Benevento. The interest in the city of Benevento, home to a number of Roman monuments among the best preserved in the Kingdom of Naples, attracts writers, antiquarians and scholars from all over Europe. Also, infact, the abbot J. C. Richard de Saint Non it provides direct testimony in the description of his arrival in the city. In line with the contemporary approach to immortalize the monuments visited and described by many travelers, Casselli, practically the only true designer in Benevento between the end of the 18th century and the first thirty years of the 19th century, realizes the autograph urban views, dated 1818 composed three drawings that help to emphasize the multifaceted architect training, capable of dealing with different artistic genres.

ID 237

Innovative strategies for emergency housing post disaster: The use of three-dimensional technology

Valentina SAPIO

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In the era of widespread digitalization of the fourth industrial revolution, and the total global connection between producers and consumers, including manufacturing processes and everyday objects takes place the new vision of the use of the design discipline. A vision based on the evolution of the design culture, on the ethical and historical roots to be protected and dedicated to the invention design and to artificial ecstasy, which is based primarily on the relationship with the new technologies but also to design new applications in the field of first emergency interventions in the circumstances of natural disasters affecting the historical and artistic heritage of humanity.

Based on the analysis of certain applications, or reconstructions of artifacts and homes, occurred in recent emergencies, which generated errors and merits, you try to test a new idea of intervention, developing an advanced model made of instruments and procedures for the realization of an open residential building system, high density and totally reversible through the use of three-dimensional printers.

Will it be possible soon, then, housing tens of thousands of people at once, quickly, comfortably and at low cost, to solve the emergency post-disaster housing with innovative instruments in urban areas, without compromising definitely the territory?.

ID 238

The Community Museum of Disappeared Villages. The Territory Self-identification through Participatory Culture and Contemporaneity

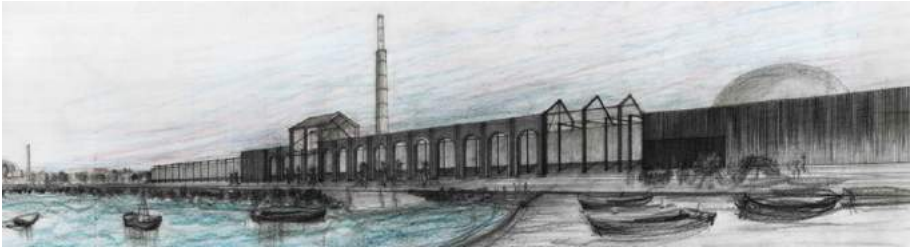
Elena SHLIENKOVA

Technical University,
Samara, Russia

Alexander YUMINOV

Nonprofit Organization
KAMA records, Nizhny
Novgorod, Russia

A traditional culture is a social agreement, a flexible process of self-identification that small ethnic groups encounter with in the present multicultural context. Community museums as a space for representation and communication of local culture are a new format that Russian provincial museums are adopting. A project of creating the Community Museum of Disappeared Villages was launched in the Republic of Udmurtia (the village of Sep) in 2016. The experimental nature of the project lies in the fact that it was initiated by the local community of one of the Republic's northern settlements that witnessed disappearing of several neighboring villages. The curatorial concept is based on the idea of "demegalization" of history and the importance of understanding the role of particular and "significant" stories, which make up a basis of civilization as such, for a general historical process. The scientific concept is premised on the principles of new study of local history, penetration of history as a science into everyday life of the rural territory; contemporaneity as the basis of an effective way to preserve historical memory where local culture becomes one of the universal languages. The goal of the project: support historical and cultural local initiative in creating a participatory village museum. The objectives: to create a new museum institution by using modern methods and technologies of presenting historical material; provide conditions for systemic work of the resource with the help of new competences obtained by the local residents and the development of the civil society institutions in the rural area. The idea was supported by the expert, scientific and academic communities in several cities (Izhevsk (the Udmurt Institute of History, Language and Literature of the Ural Branch of the Russian Academy of Sciences), Nizhny Novgorod (Volgo-Vyatsky Branch of the State Museum Exhibition Center ROSIZO), Samara (Samara State Technical University) , the regional and district administration, as well as Vladimir Potanin Foundation [1] and the Perspektiva Foundation in Support of Civic Activity in Small Towns and Rural Areas. [2] Nonprofit Organization KAMA records provides overall coordination and management of the project.



ID 240

Competition for the new Science Centre

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Floating between the earth and the sky – this is the concept of the new Science Centre. Its form is simple, light, transparent, 'held' by steel girders in memory of the event of 4th March 2013, when we were all left 'holding' our breath on hearing the news of the tragedy. Inspired by the sculpture of the artist Dani Karavan, "The Way of Knowledge", which miraculously escaped the fire, a new morphology for the Science Centre was created: a parallelepiped facing the sea, suspended on steel girders, raised 1.25m from the ground, with a double-glazed cladding inserted into another masonry parallelepiped perpendicular to it. The masonry building, 11.50m high, is lit by a transparent semisphere and incorporates the old building with its 4 arches facing south - east, which partially survived the fire. Between these 2 parallelepipeds and the pre-existing theatre another structure has been created, in the shape of an "S", which acts as "filter" between the 2 parallelepipeds and the pre-existing theatre.

ID 241

Provision of noise safety of urban territories: russian experience

Andrey V. VASILYEV

Samara State Technical
University, Russia

The questions of monitoring of acoustical radiation of urban territories are considered. Analysis of the negative impact of noise to urban territories is carried out. Analysis of acoustical pollution of urban territories on the example of Samara region of Russia is described. Analysis of noise measurements results of the biggest towns of Samara region of Russia is allowing to determine the most significant values of acoustical pollution and exceeding of sanitary norms. Measures of noise impact reduction in conditions of urban territory of Samara region of Russia are considered. Results of research are allowing to make the general conclusion about the necessity of provision of noise safety of urban territories.

ID 242

Andrey V. VASILYEV
Vlada V. ZABOLOTSKIKH

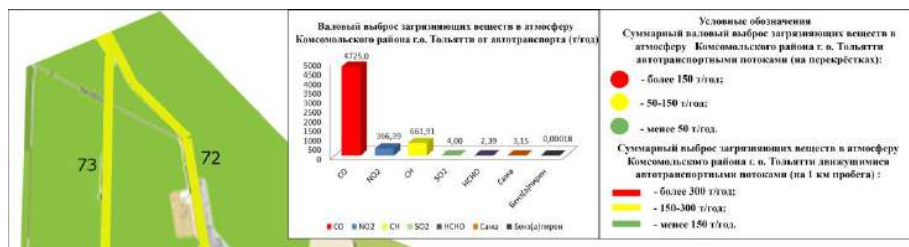
Samara State Technical
University, Russia

Methodological approaches to complex assessment of man-caused ecological risks for health of the population and for biosphere

The risk assessment methodology is the effective analytical tool for the characteristic of influence of factors of the environment on the state of health of the population. Besides, it became one of the most important instruments of improvement of urban medium quality. It is known that risk factors are the conditions of the environment significantly increasing probability of diseases of the population. Risk assessment is an objective way of assessment of potential impact of man-caused factors on health of population and on ecosystems of biosphere.

New methodological approaches to complex assessment of man-caused ecological risks for health of population of urban territories are suggested. Complex risk assessment of chemical, physical and biological pollutants includes possibility of accumulation of pollutants (i.e. gradual accumulation in an ecosystem or in an organism of the person of any harmful substance), of summation, addition of small amounts of various harmful substances, and of mutual strengthening of effects (synergetic action).

Main stages of complex assessment of ecological risks for the health of population and for biosphere are described. Results of risk assessment using suggested methodological approaches in conditions of Samara region of Russia are described.



ID 243

Estimation of atmosphere air pollutants as a factor of ecological risks of urban territories

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University, Russia

The constant increasing of impact of different pollutants to the air quality in conditions of urban territories is presently a serious problem causing serious negative effects for the public health and for environmental state. Methods of estimation of atmosphere air pollutants as a factor of ecological risks of urban territories are suggested. Results of analysis of main air pollutants in conditions of modern town are described on the example of Togliatti city of Russia. Measurements results of atmosphere air pollution are analyzed. It is determined that automobile transport is the main source of atmosphere pollution. Recommendations for the improvement of air quality near to the main sources of air pollution are considered.

ID 244

The challenge of built heritage protection against fire risk in Valparaíso, Chile

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Environmental
Sciences Centre EU-
LA-Chile University of
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Ignacio BISBAL

University of Bío-Bío,
Concepción, Chile.

Chile is a country of disasters because, due to its geographic characteristics, it is often devastated by earthquakes, tsunamis, floods and volcanic eruptions. These recurrent natural catastrophes have conditioned the urban development of several cities, generating a constant destruction of the built heritage. In response to this challenge, authorities have introduced regulatory instruments, oriented basically by the country's seismic conditions. Other types of disasters, e.g. fire, constitute a serious threat to cities, including areas of maximum cultural value such as the Historic Quarter of the Seaport City of Valparaíso, protected as a UNESCO World Heritage Site. This situation has worsened in recent years as a result of large fires that typically start in the urban-rural fringe and advance towards the city hills. Our work focuses on the risk analysis as well as the consequences that this kind of fires entail for the conservation of the patrimonial area of Valparaíso.

ID 245

The diversity of architectural and urban heritage in southern Jordan and northwestern Saudi Arabia: The local experience of the two countries in conserving heritage and its development.

Ali Abu GHANIMEH

Waleed ALHEMAIDI

Diala ATIYAT

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The process of conserving architectural heritage is a societal perquisite and a necessity for this generation, for it brings together the past, present and the future that is passed by generations to strengthen the existing civilizations. Heritage is what best portrays identity and originality, and is considered the first mark of civilizations that dominated then perished in the area of the architectural heritage across Jordan and Saudi Arabia; our study focus, their architectural heritage is found to be a distinguished art and a legacy that differ from the rest of the region by its variations as a result of the many historic eras that both countries have witnessed. This paper will address the issue of conserving architecture and urban heritage and its development within the Jordanian and Saudi experience, which is characterized by its abundance and diversity. The paper will review the concepts of development of the process of preserving architectural heritage, where not only the customary processes were approached but the community and environment were included as well.

The primary research question is determined by the nature of the factors that influence the attainment of the architectural and urban preservation approach, which will be stated at the end of this study. The paper at hand presume that any city acquires its architectural character from the consistency and harmony between its components over various successive eras, hence, one of the most important and notable projects that was implemented in southern Jordan and northwestern Saudi Arabia will be examined, this project is connected to the preservation of architectural and urban heritage as well as the rehabilitation of these areas, an analysis of the steps of execution of selected models that include the most important of these areas will be conducted. The paper aims to identify the components that ensure that the preservation process is auspicious and interactive with the surrounding environment in a sustainable and satisfactory by the onlookers. This study will adopt the descriptive analytical method with which information will be collected, field visits, photographs and personal interviews with the concerned parties will be used. The acquired data will be analyzed to introduce results and recommendations.



ID 246

The Resilience of the Valley of Temples Among Natural Calamities and Social Disasters

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Preservation of the cultural heritage, intended as common patrimony, is a cultural achievement that interterritories like Sicily, which has often suffered the lack of legality, is the result of a difficult process of implementation. Cultural heritage is not ruined exclusively by natural calamities: damages caused by social and cultural disasters may at times be even more devastating. The archaeological park of Agrigento, born in 1947 after a natural disaster (a landslide in 1944), hides a history of a half century of battles between the illegal land use and legislative measures to protect a cultural heritage recognized worldwide (registered in the WHL in 1997). After fifty years of attacks against the archaeological park, a slow process of collective re-appropriation of the Valley of Temples has begun since 2000. A law established by the Sicilian Region has launched this process; this law, unique in its genre, is finally producing long-awaited results. Herein, we describe battles lost and won, stakeholders took to the field, failure and successes that, during the last decade, have transformed the Valley of Temples from a synonymous of illegality and unauthorized building into an example of excellent enhancement of the cultural heritage. In 2017, indeed, the archaeological park has been awarded the Italy Award for the Landscape and then brought up by the Ministry for Cultural and Environmental Heritage as candidate to represent Italy for the European Council Landscape Award.

ID 247

A “jewel at risk”: Venice and the historical phenomenon of acqua alta

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The frequency of flooding in Venice has drastically increased over the last 50 years as a major consequence of natural and anthropogenic land subsidence, and a more active lagoon hydrodynamics induced partly by deepening of the largest navigation channels. Is Venice dying, a victim of its environment and of its own success? Many people fear so: the local residents who observe the decline of their beloved city, the Italian authorities, the millions of visitors. Beyond the splendour of restored churches and palaces, beyond the magnificent façades the reality is dramatic: the city is now often admired from gigantic ships in the Giudecca canal by cruisers of modern times. The survival of Venice as a living and vibrant city is at risk. The lagoon environment has always been characterized by a pronounced morphodynamics, inducing important morphological changes to the lagoon setting over the relatively short time of a few centuries. The aim of this paper is to analyse the disasters history of this fascinating world surrounded by waters. In fact, the economic system and the existence of the “Serenissima” Republic itself was based on “water”. Water meant refuge, safety, nourishment, wealth, military strength, and prospect for new developments.

ID 248

Disasters and earthquakes in Western Liguria. The “earthquake of Diano Marina, 1887”

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Liguria and in particular the Western Liguria has been repeatedly, over the centuries, upset by earthquakes that have heavily influenced the life of the inhabitants, on building, on landscape and urban planning. A violent earthquake shook the Western Liguria the Christmas Day 1222, this catastrophic event remain limited information because of past centuries. Liguria Western trembled at length between March and July of 1564, the chronicles tell that the people slept outdoors for months because of the repetition of earthquake. In the nineteenth century have been registered numerous earthquakes since 1802, the most disastrous of 23 February 1887. To better understand the building codes it is essential to analyze the damage caused by the earthquake that occurred in Liguria during the course of the nineteenth century. The integration of written documentary sources and graphics, drawings and early photographs allow a complete picture of the damage and reconstruction interventions. The integrated interpretation allows us to understand the transformations of Liguria, the drafting of zoning and building regulations. The research in the future aims to analyze and integrate the documentary sources with the reading of the territory and being enshrined with the rules of the redevelopment plans and master plans up to current regulations through the analysis of data and sources using geographic information systems and multirelational database.

ID 249

On additional services of the Royal Palace of Caserta. Genesis

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In the field of the management of cultural heritage, it is appearing a new culture of quality and efficiency. The choice of the organizational model that can be applied to the cultural assets it is considered as an incisive factor of success for the policy of this field. The use of new formulas of management is established also in our country in a context of development of managerial logics in the public administration's system.

The starting point consist of passing the so-called direct management and looking for new forms of management of the cultural heritage, which are different from the traditional ones. The history of additional services in public museums is a history of intuition that had incredible difficulties to be transformed in a suitable and correctly established management model able to find the exact balance between opposite needs and able to outline the roles of different actors involved in the connected field. In this essay, we will try to outline the genesis of indirect management and additional services at the Royal Palace of Caserta.



ID 250

The role of intangible aspects in conservation and promotion strategies of Matera and its surrounding territory

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In the past, only material structures were considered as heritage. Recently, thanks to the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) this concept – previously considered, even if not explicitly developed, in the Nara Document of Authenticity (1994) - enlarged its scope to include the intangible heritage. Thus, also the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated - start to be defined and protected as heritage. According to these issues, what is the role of the intangible in the growing recognition of the values of a Site? How does it affect the definition of new boundaries of Cultural Sites? The paper aims at developing these issues through the case study of the Sassi of Matera, in Southern Italy, declared UNESCO site in 1993 for its unique urban environment in which people used to live in almost total symbiosis with nature, taking advantage of every possible resource in a smart and sustainable manner. Furthermore, the city of Matera, has been recently appointed as European Capital of Culture for 2019. Presenting the last initiatives on conservation and promotion of heritage, in preparation of the 2019 event, it will be outlined the relationship between the tangible and intangible aspects in the value assessment of this heritage site. Through a series of examples, it will be presented how cultural spaces as well as intangible aspects play a key role in the broadening of heritage's boundaries and, as a consequence, in the conservation and promotion initiatives.

ID 251

...“dell’ armonioso ordinamento tale che tutto l’edificio riposi interamente nel disegno stesso”

L.B. Alberti De Re Aedificatoria

...“about the harmonious order that the entire building rest entirely in the same Design”

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The research aims to address a disciplinary aspect pertinent the Drawing of the built, the already done, Drawing of Surveying and what to do, project's Drawing which product of disciplinary integrated skills, representational technologies (software and hardware) to learn and change the reality that the investigator perceives to re-establish it as a patrimony of knowledge. A theoretical research that actualize it into practice and application activities where knowledge, tangible and intangible values can contribute to the definition of an result estimated at the time of the survey carried out and could also be updated in time with subsequent management actions and knowledge of government as measurable value and trackable in constitutions aspects, geometric, dynamic and formal of the Territory, Architecture and Landscape using technological prostheses and aids such as BIM interfaces and Webgis.

This involves the examination of the relationship between the ancient who uses the work and knowledges to achieve reliable works with prostheses and aids available to him and the modernity that, despite having prosthetics and aids relevant technological wonder, for the most part connotes in anthropic changes without culture and ethics, which are the cause of the disaster, to rediscover the basic elements and parameters underlying the construction of good works; you think of the modern infrastructure often unreliable compared to the old ones or to the restoration of monuments that not giving new linguistic units to the artifact in the types and structure.

Therefore, knowledge and integrated representation of all the elements that characterize the Architecture are essential conditions to manage preventive activity against disasters and to ensure the safety of the natural and built heritage as well as the training of a human capital able to respond at this undelayable requirement; a security characterized by a predictive and precautionary design that invests the Architecture and the landscape in the becoming as a collective project of society.

ID 252

The Creative Land. Heritage and Creativity in the Neo-Anthropocene

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Urban creativity is a hard challenge, because it doesn't need rules or models, but adaptive protocols applicable in different local contexts, able to mount resources, capacity building and creative environments. It challenges us to find local features that could provide good practices to be turned into methodologies or components to forge new urban and human regeneration tools, based on the cultural armature and citizens engagement. We live in a Creative Land composed by generative cities, a wide palette of innovation labs, as experimented by several worldwide networks supporting what's variously termed social enterprise, community interest companies, impact economy, organizations that aim to create positive social impact through enterprise. The Creative Land could be seen as a spatial network of social catalysts, and creative cities are living organisms. Culture is more than the tangible part of sustainable development through the heritage or the intangible part through the creativity, but it's the collective intelligence that puts in connection tangible heritage and intangible identities, cultural infrastructures and creative economies, historical sites' conservation and urban innovation. So, an effective creative urban agenda asks for practical actions, all grounded in local contexts and formulated and implemented through a collaborative approach, and a panel of initiatives that could act as the beta testers of the new creative-driven paradigm of sustainable development.

ID 253

Resilience of cultural heritage to natural disasters: The recent involvement of Science Academies

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The list of recent catastrophic events that have severely affected cultural heritage and art cities worldwide is extensive, encompassing the devastating effects of earthquakes, floods, hurricanes, landslides, debris flows, volcanic eruptions, tsunamis and fires. Unfortunately, for the most part, little has been learnt from these catastrophic events. A striking example in this respect is the case of Florence: an assessment of an independent International Committee has ascertained that, after 50 years, insufficient action has been taken to reduce the risk that an event analogous to the 1966 floods would lead to a similar tragedy today. This conclusion is even more worrying in a century marked by the threat of climate change that may lead to increasing frequency and intensity of weather related catastrophes.

Cultural heritage and particularly art cities, can be better protected from natural hazards by integrating resilience strategies developed in the general field of disaster risk reduction with ad hoc actions needed to account for the specific features of cultural heritage. Cultural assets are indeed unique and once lost they are lost forever. This 'uniqueness' should prompt national governments, international institutions and non-governmental institutions to enhance the special attention for preservation and protection of heritage that initiated with the Convention on the Protection of the World Cultural and Natural Heritage adopted by the General Conference of UNESCO in 1972.

ID 254

*Circular economies and regenerative for the city.
Ecology, resilience and metabolism of the urban
waste areas.*

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Today's economies are largely consuming natural resources to create value, consequently involving the production of important quantity of waste (EC, 2010b, 2011; EEA, 2015), influencing the climate change, and generating irregular urban growth (IPCC, 2014; UN-Habitat, 2010; UNDP, 2005).

In Europe, the recycling of materials and the energy produced from the waste treatment is capable to recover just the 5% of the original raw materials. It is possible to register a significant wastefulness also in sectors that are considered mature and optimized, like in the mobility and the third sector (Ellen MacArthur Foundation, 2013).

It is estimated that in Europe the resource consumption per capita is around 16 tons of materials (EC, 2010a). The spatial results of this unbridled model of consumption affect both urban and peri-urban areas, becoming part of the (peri-)urban ecosystem, for instance as landfills, plants for the treatment of wastewater, and other kinds of infrastructures.

In the field of industrial ecology the inflows and outflows of materials and energy are part of the 'urban metabolism' (Allen, Broto, & Rapoport, 2012).

ID 255

Planning in the Face of Risks. Naples Metropolitan City and volcanic risk.

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From territorial planning point of view, the metropolitan area of Naples could be seen as a bipolar landscape in which two major risk fulcrums (the Vesuvius and the Phlegrean Fields) must determine the visions and strategies for the territory.

If large-scale planning involves promoting co-operative forms and co-planning with local realities, the scenario that prevail is particularly complex and connected with the new tasks attributed to the Metropolitan Cities. The contextual nature of risk perception and response is very typical of contemporary society and of a “second kind of modernity” [1], in which the risk factors “described by science” are relativized by the cultural background of the society in which they occur, exposing to oblivion some obvious risks or, conversely, believing that anything is potentially dangerous, according to the perspective from which the events are observed [2].

Throughout the metropolitan area of Naples, there is an overlap of risk factors that periodically generate more or less serious events: landslides, soil pollution, earthquakes, volcanic hazards, which are quite infrequent but extremely dangerous.

In particular, in this area, the risks connected with volcanic activity are real evolving ones (among the biggest all over Europe), that should be weigh significantly on territorial planning, on its possibilities and on direction of its development paths.

The relativization of this risk and the characteristic cultural approach held by population [3], have almost reduced its perception and only in the last decade, institutions have undertaken preventive works, planning actions and regulatory constraints.

In this sense, risk constraints are a decisive variable, but above all a potential that can help define a “paradigm shifts” [4] needed for a more effectual and strategic planning at the metropolitan level.



ID 256

Revitalising Historic Countryside Home Rebirth. Nirvana of a deserted village.

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From a haphazard opportunity, a hidden ancient village - Tong's Village locates at Huzhou City, Zhejiang Province is being discovered. The village is about 150 km east from Shanghai, 60km southeast from Hangzhou, one of the China's most popular tourism city and 20km northeast away from Lake Tai, China's largest freshwater lake.

From the village gateway, the path is along with stone houses, broken walls and wood beams that are covered by vines and bushes.

In this remote village, it used to have 22 villagers. However, due to China's economic boom in the past two decades, most of the villagers have already left the village, only one old man has decided to stay behind and be the last guardian of the utopia.

ID 258

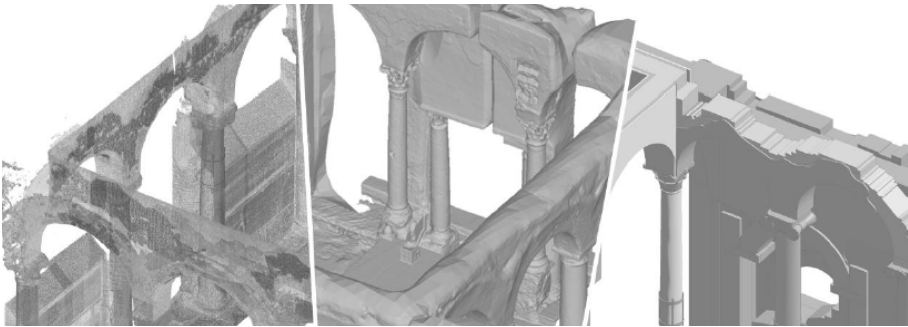
Where to go. The Predicament of Protection and Development of Traditional Chinese Village Culture.

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Chinese traditional villages carry the five thousand years of farming civilization of the Chinese nation, and their diverse landscapes and multi-ethnic cultures shows the world a colorful habitat culture, which is not only the root of Chinese civilization, but also an important part of world civilization. With the process of globalization and industrialization, China has rapidly transformed from the largest agricultural nation in the world into the largest industrial nation. The traditional Chinese villages have rapidly deteriorated in the process of transformation. If they are not protected and developed in a timely manner, the world civilization will lose an important chapter. However, the protection and renewal of traditional Chinese village culture is a complex and extremely complicated comprehensive project. This article combines the author's related research practice, aims to reflect the mechanism and the results of practice in the cultural protection of current Chinese traditional villages, and calls for that the protection of human civilization development is the responsibility of all mankind.



ID 259

Toward the augmented HBIM: the BIM model as historical witness

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Tourism represents 13% [7] of the Italy's Gross Domestic Product (GDP), with 185 billion euro of an estimated value. An undoubted value resource that not always optimizes the cultural and the economic profits. The main reason is the lack of cooperation of multivalent abilities, which have the purpose of combining efforts in the management.

The figure that can fit such as an ashlar, that can be a bridge, between the traditional values and the most modern and intuitive modelling and asset management technologies is the architect. The skills, that characterize this figure, bring him to create a connection between those technologies and general people, who usually do not interact with the knowledge processes.

The tool proper of the architect is the critical survey. Starting from the conventional drawings, moving through the laser-scanner technologies, the methodology that fits more with the need of preserving the acquired data, is the BIM [5] one.

In this paper it explores the possibilities that the BIM modelling offers compared to the historical heritage, from the elements modelling, in a classical parametric bookshelf, to the geometrical and multidimensional information which are present in the model, to the way to deal the data kept by the model. Data that needs to be set on interactive platforms ready to be queried by the users that interacts with the BIM model.

ID 260

The critical knowledge of architecture through the parametric BIM design.

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We mainly use parametric modeling of Architecture for the creation of project models and not for the creation of models that describe the existing. However, we can also identify a great potential for this second sector.

We mainly use parametric modeling of Architecture for the creation of project models and not for the creation of models that describe the existing. However, we can also identify a great potential for this second sector.

The proposed example of the study and parametric modeling of the windows of the workers' houses in Piazza Bartolo Longo in Pompeii shows how practically the above advantages materialize and opens a reflection about the BIM approach and the fact that developments directed towards the HBIM .

ID 261

The new risking heritage

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In modernity genius loci coincided with genius saeculi, the forms of the city, of architecture, of fashion fulfilled the epoch. In the modern age it was unthinkable to dress or to design furnitures, houses or cities as they did in the previous century.

Today it is no longer the case. The distance between gestalt and zeitgeist never has been so dramatic. The paradigm that binds the aesthetics to the projection of time blown up. The overcoming of modernity lies especially in this. We live like an eternal present. Where the sensitive forms and their representations in solid space no longer carry an idea of the future. They seem to be always more or less the same. Immutable and increasingly displaced in the rush of the sharing information technologies revolution that is upsetting the system of social relations and the way in which things and places are related each other. Even today everything changes and so much faster than before. Innovation is conducted in the intangible areas of the net rather than in the material solid spaces. The way to experiment and disseminate informations and knowledge are especially mutating in a vortex of accelerated change where the tools and virtual synapses materials involve the activities and lifestyles linked to them while the more traditional and unconnected spaces tend to remain inert, equal to themselves. Or they change slowly. Architecture makes it difficult to understand this new condition.

ID 262

Non-linear FE model for cyclic response of brick-cement mortar masonry shear-walls

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The study focuses on the cyclic response of brick-cement mortar masonry walls under constant compression and cyclic shear force. The objective of the study is to calibrate a FE model available to simulate the behavior of masonry structures under cyclic loads, such as in case of earthquakes. A previous experimental campaign has been carried out at the "Politehnica" University of Timisoara (Romania) on real scale specimens of 1500 x 1500 x 250 mm tested in cyclic shear-compression. The test revealed a diagonal cracking with the damage of the corners for rocking, typical of shear failure mode. A non-linear FE model in Abaqus has been developed based on the obtained results to have the same global response of experimental tests. A macro-modelling strategy has been followed defining Concrete Damage Plasticity (CDP) material model of the software's library. CDP allows to consider the mechanical non-linearity of the material, both in compression and in tension, through a post-cracking smeared approach in which the openings of the cracks are artificially simulated with a stiffness lost. CDP also provides stiffness recovery when passing from alternative compressive and tensile stress. Uniaxial compression have been defined according to the provisions of Eurocodes, while uniaxial tensile have followed the fracture energy criterion, by means of a stress-displacement formulation. The post-cracking behavior, both in compression and in tension, has been set defining the damage parameters as an exponential degradation of the elastic modulus. The performed FE analyses reveal a very good agreement with the test in terms of stress-strain distribution, forced displacement curve and total dissipated energy.

ID 266

The square and the Amphitheater

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The inadequacy of administrations and their lack of sensibility for public spaces that have elements of recognized interest, leads to continuous and almost irreversible damage to the historic and architectural heritage, especially thinking about the unlinked and out of context constructions that have been and will continue to be realized in places with incredibly strong identities throughout the Country's territory, with particular emphasis on its Provinces. This is the case of the large rectangular square on the Appia Antica and in front of the Anfiteatro Campano of Santa Maria Capua Vetere (Ancient Capua), violated along the rural curtains extended on its long sides, from unnecessarily ambitious contemporary building. The same area has been recently object of an Architectural Competition, the outcome of which is the base of its new configuration which includes and introduces the imprint of ancient Republican Spartacus Amphitheater and the architecture of the following one, much larger and well preserved. Everything that is happening in this archaeological site today requires a serious critical reading of the transformations that have taken place in relation to the site's history, as well as appropriate studies of what can still be done to qualify its rural frame, especially considering the recent years surprising tourist revival, due to the widespread interest in the archeology it has sparked.

ID 270

Architecture in the post-emergency phase. Processes of conservation and transformation in the Philippine archipelago

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The paper presents the research results of the International Agreement signed between the UP Diliman College of Architecture at the University of the Philippines and the Department of Architecture at the University of Naples Federico II. The scientific collaboration focuses on the post-disaster reconstruction in Bohol Island. The cultural value of the Bohol's architectural heritage has a strategic role in recovery and regeneration actions: the abandonment amplifies and extends the effect of natural disasters, with a powerful influence on the collective memory. The scale of damage has profoundly altered the typological, morphological and pre-existing urban relationships.

The necessity to integrate physical, economic and social values into a general urban regeneration strategy, highlights the importance to define a new system of rules to guide transformations into a coherent design. Project choices involve psychological, perceptual and behavioural aspects of users, in a process that requires local community involvement, with the aim to define new rules of the project for a renewed cultural heritage. The examined cases allowed to develop design processes and solutions to extend to the general religious heritage of Bohol and to other areas of the Philippines.



ID 300

Representing territorial regeneration in the disastrous area of the Domitio Coast in Italy

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The paper aims to briefly present the main sources of environmental and landscape degradation in the city of Castel Volturno in the Caserta-Naples metropolitan area, as well as the main natural, cultural and intangible assets of the area. Moreover, the author highlights the most important project in progress and proposes a strategy of urban regeneration capable of triggering a process of cultural and environmental re-qualification for the city. The analysis takes into account the legal and abusive urban settlements built on the coast since the late 1960s, through a brief historical reconstruction of the main events that have defined the current landscape of the territory, along with its social and economic structure. The method for the critical reading of the environmental disasters as well as the historical and landscape beauties in the municipal boundaries is linked to the principles of multi-criteria and multidisciplinary analysis theorized by Carmine Gambarella.

The methodology finds an operational application on the territory in the Strategic Participated Tourist Plan on the Domitio Coast. The strategic idea defined by the Plan elaborated by the Campania Region Research Centre for Cultural Heritage, Ecology and Economy (Benecon), UNESCO Chair on Landscape, Cultural Heritage and Territorial Governance proposes for Castel Volturno a role of potential tourist role in the metropolitan area of reference, node and junction of a network of assets at the large territorial scale.

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